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First recorded breeding of Clarke's Weaver *Ploceus golandi*

Colin H.W. Jackson, Fleur Ng'weno, Julius Mwambire, Jonathan Mwachongo, Albert Baya, Patrick Changawa, Japhet Garama, Samuel Kenga, Samson Katisho, Samson Barisa, Kazungu Thuva, Peter Wario, Brian Finch, Silas Ekesa and Gabriel Katana

Summary

The breeding site and nest of the Kenyan-endemic Clarke's Weaver had remained a mystery for 100 years. The species was described in 1913 from the north Kenya Coast, but the first breeding colony was found in March 2013 in the northern section of the Dakatcha Woodlands, northwest of Malindi. An estimated 400–500 nests were concentrated in a small area of a tiny wetland. Adults were displaying and nest-building on 23 March, and when next visited on 7 April, adults were feeding young in the nest. Nests were coarsely woven with a low side entrance, placed in the tops of tall sedges, standing in water. Both males and females contributed to nest building and to feeding the young on insects, and breeding appeared to be closely synchronized, so that by 19 April the colony had been abandoned.

Introduction

Clarke's Weaver *Ploceus golandi* is a member of the weaver family Ploceidae, which is represented in Africa by more than 90 species (Fry & Keith. 2004). It was first described from a specimen of a single male taken "somewhere between Mombasa and 100 miles to the north" in 1912 by a field assistant of Col. Stephenson Clarke and his brother Capt. Goland Clarke (after whom Stephenson Clarke named the bird) (Clarke 1913). There were no further records were made of the bird for over 40 years and it was even thought to possibly be a "partially melanistic phase" of Lesser Masked Weaver *P. intermedius* (Mackworth-Praed & Grant 1957).

Clarke's Weavers were rediscovered in the 1950s in the Arabuko-Sokoke Forest between Kilifi and Malindi on the coast of Kenya, and the species was included in *A Field Guide to the National Parks of East Africa* (Williams 1967) as one of "the rarer birds". From the early 1980s it was frequently seen in the Arabuko-Sokoke (Backhurst 1986, Turner & Pearson 1989, FN pers. obs.), especially in the *Brachystegia* woodland. In July 1994, Clarke's Weavers were observed by D. Ngala and D. Turner in the Dakatcha Woodlands c. 25 km to the north of the Arabuko-Sokoke (Pearson & Turner 1998) where a significant area of *Brachystegia* forest exists, the most northerly in East Africa. Still there was no real evidence of breeding except for four observations of free-flying dependent young being fed by adults (Jackson 2011).

Recorded only from the Arabuko-Sokoke Forest and Dakatcha Woodland, and with a population estimated at only 1000–2000 pairs in 1985, Clarke's Weaver has been listed as Endangered on the IUCN Red List (Collar & Stuart 1985, BirdLife International 2015).

Since many birders visit the Arabuko-Sokoke Forest, yet no evidence of breeding had ever been reported, it had been assumed for some years that the weaver must breed elsewhere, the Dakatcha Woodlands being the other likely option (Fanshawe 1994, Jackson 2011). From August 2000, A Rocha Kenya carried out near annual surveys for breeding birds in *Brachystegia* habitat in the Dakatcha Woodlands. In 2005, Nature Kenya secured funds from the Critical Ecosystem Partnership Fund to build community capacity for the conservation of Dakatcha Woodland Important Bird Area. FN and members of the Dakatcha Woodland Conservation Group (DWCG) then undertook regular bird monitoring in the IBA from 2007.

Clarke's Weaver has been placed in a superspecies with Weyns's Weaver *P. weynsi* (Fry *et al.* 2004), a similar-looking, social forest weaver in Uganda. The breeding site of Weyns's Weaver was unknown until 2007 when it was discovered in swamps adjacent to the forest where it foraged (Mills 2007). This suggested that Clarke's Weaver might also breed in wetlands and so more effort was put into surveying wetlands within the Dakatcha Woodland.

First record of Clarke's Weaver roosting in seasonal wetlands

During the first week of January 2013, a monitoring team from Nature Kenya and Dakatcha Woodland Conservation Group (DWCG) surveyed various sites in the Dakatcha Woodland IBA. It had rained heavily in December, and many of the small wetlands had filled with water. On 5 January about midday, the team drove through the Chamari-Chalalu Community Conserved Area to an area known as the Chalalu seasonal wetland (2°51.08' S, 39°51.90' E; Fig 1.). This is a low area, the size of two or three football fields, and it was lush with tall grasses. A small part of the grassy area was deeper, with two kinds of *Cyperus* sedges growing in water.

On 6 January, whilst driving along the edge of Chalalu wetland in mid-morning, a flock of about 120 Clarke's Weavers, mostly adult males, was seen in the meadow. These were flying in and out, chattering, and perching on the sedges and on a *Terminalia* tree and *Thespesia* bushes, then disappearing among the sedges. Small flocks flew out and disappeared over the trees, while others arrived and landed in the wetland. In the same wetland there were several Grosbeak Weavers *Amblyospiza albifrons*, mostly males, with some old nests. They were displaying, singing, chasing each other, and sometimes chasing the Clarke's Weavers. There was also a flock of about 40 Red-headed Quelea *Quelea erythrops*, mostly males, flying and landing with the Clarke's Weavers. The Grosbeak Weavers and at least some of the Clarke's Weavers remained in the sedges at nightfall. This was the first observation of Clarke's Weavers both roosting and using a wetland, but no nests or evidence of breeding activity was seen.

On 31 January the wetland was revisited by FN with members of the DWCG and A Rocha Kenya staff. Clarke's Weavers were still present, but only 30–40 birds remained, suggesting that the site was only being used for roosting. On 22 March, FN and a DWCG team found that the Chalalu wetland had dried up and local community members had cut the sedges for roofing material; no Clarke's Weavers were seen. There were, however, a few coarsely woven nests among the cut sedges on the ground, which were assumed to be those of Clarke's Weaver, and contained pieces of broken light blue egg shell.

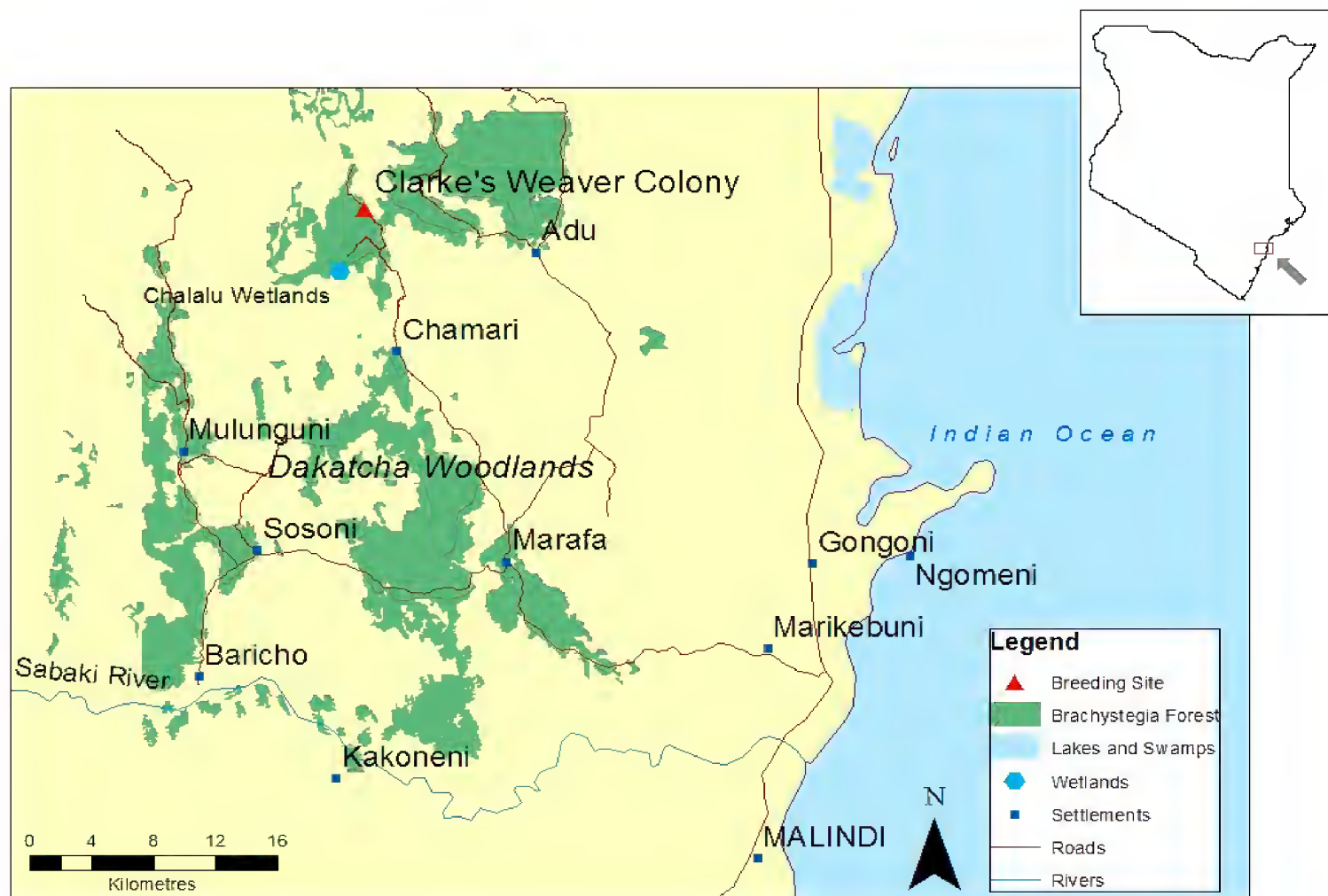


Figure 1. Map showing the location of the Clarke's Weaver colony within the Dakatcha Woodlands area. The distribution of *Brachystegia* woodland is a rough depiction of key areas of this habitat.

Breeding site found

The Nature Kenya/DWCG team surveyed several sites on 22–23 March. There had been rain showers in March, and the flowering *Brachystegia spiciformis* trees were bright green with new leaves.

On 23 March, at a small seasonal wetland known as Arbamukenge ($2^{\circ}48.87' \text{ S}$, $39^{\circ}52.80' \text{ E}$; Fig.1), a large flock of Clarke's Weavers was seen in the sedges. Several hundred birds, males and females, were actively flying back and forth across the wetland. They were making buzzing, sizzling calls, and some males seemed to be displaying, while others just perched on the sedges. Several birds flew off to another part of the wetland, but they soon returned, both males and females carrying strips of sedge. Where they landed, the dark brown, rounded shapes of nests could be made out in the tops of the sedges. Some females were perched on top of the nests and a male was observed weaving more sedge strips into a nest. The breeding site had finally been discovered.

The next day many weavers were seen in the wetland. An overall estimate of c. 700 individuals was made for the colony, and the number of nests was estimated at between 400 and 500.



Figure 2. Clarke's Weaver nesting colony, the nests can be seen as brown spots nestled in the tops of the sedges (Photo J. Mwachongo).

During visits on 7–8 April, both males and females were seen carrying food to the nests, while by 15 April fledged young were being fed. On 19 April the colony appeared to have been abandoned, and by 25–27 April no Clarke's Weavers were located in the northern Dakatcha Woodlands. Four empty nests were collected, of which two were left at the DWCG Resource Centre in Marafa, and two were deposited in the ornithology collection of the National Museums of Kenya in Nairobi.

Description of colony and nests

Arbamukenge wetland is 80 m long and 30 m wide and is set in a mosaic of relatively low *Brachystegia* forest on white sandy soil and large patches of dense mixed forest on red soil, which is characteristic of the northern Dakatcha Woodlands (Fig. 3). It is located on the western edge of a 'corridor' of *Brachystegia* running more or less north-south and is bordered by dense mixed forest habitat consisting of trees and thickets to the west, and relatively low *Brachystegia* forest immediately to the east, southeast and north.

Figure 3. Image courtesy of Google Earth showing the location of the Clarke's Weaver colony at Arbamukenge. Dark solid green represents dense mixed forest thicket to the west, and the stippled green shows *Brachystegia* forest with white sand. The area cultivated to the north is largely for pineapple plantations. The brown line is the main track through the area.



At the time of the breeding event, Arbamukenge was a shallow, partially flooded hollow filled with grasses and the sedge *Cyperus denudatus*. It also contained a large

area of a larger, stronger sedge, *C. exaltatus*, growing c. 1–1.5 m (identified by the East African Herbarium, Nairobi). There was no open water except for 2–3 m² where people collected water at the northern end. The nests were in a section of *C. exaltatus*, and were clustered in a densely packed colony, approximately 12–15 m in diameter, and set nearer the western edge of the wetland. Sedges are normally found in deeper water than grasses, and many weavers build nests over water as a form of protection against predators (Craig. 2010).

Detailed nest description

The roughly-built nest was made of strips of sedge attached at the top to a tall, live *C. exaltatus* (Fig. 4). Its shape varied between rounded or oval, to more pouch-shaped – probably dependent on the height and density of the sedges available for attachment. Of two nests collected, one measured 170 mm high x 100 mm wide, the other 140 mm high x 80 mm wide.

Nest material consisted of broad blades of medium-sized strips of sedge that were coarsely and loosely woven. From observation, all the materials came from the same wetland, mainly *C. exaltatus* and *C. denudatus*. The entrance hole was 30–40 mm wide and located on the side of the nest, near the bottom. It lacked an entrance tube, but one nest seemed to have a slight porch over the entrance. The nests appeared to have no ceiling (see Collias & Collias 1984), but the bottom of the nests had a lining of slightly finer, softer grass-like materials. No feathers were noted in the lining. In a number of cases, the nest tapered towards the top, where it attached to the top of the sedge.



Figure 4. Clarke's Weaver nest (Photo A. Baya).

Behaviour of weavers at the colony

On 23–26 March, males were displaying and singing from the tops of nests, while both males and females collected nesting material from elsewhere in the wetland and took it back to the colony. At one point as many as 200 birds took off, flew 30 m, and landed where the sedges were shorter and less dense. Three to four minutes later they took off again and returned to the colony with a few males and females carrying strips of sedge to add to the nest construction. By 26 March the number of displaying males and birds carrying nesting material had noticeably reduced, suggesting that incubation was under way.

There was generally a constant chatter from the weavers – the familiar “sizzling” sound of the species – but from time to time all the birds would go quiet, as happened around midday on the 26 March, following which a flock of c. 100 flew up out of the colony and perched in a tree overhanging the edge of the wetland where they sat for a few minutes chattering again before about half took off and flew east from the colony, presumably to forage.

By 7–8 April, no males were displaying from the nests, and instead there was a steady stream of both males and females leaving the colony and returning carrying food to very vocal chicks in the nests. The majority (67%) left the colony in a northeast or easterly direction, whilst 64% re-entered from the south-southeast (Fig. 5). This implied that the birds were foraging mainly to the east of the colony.

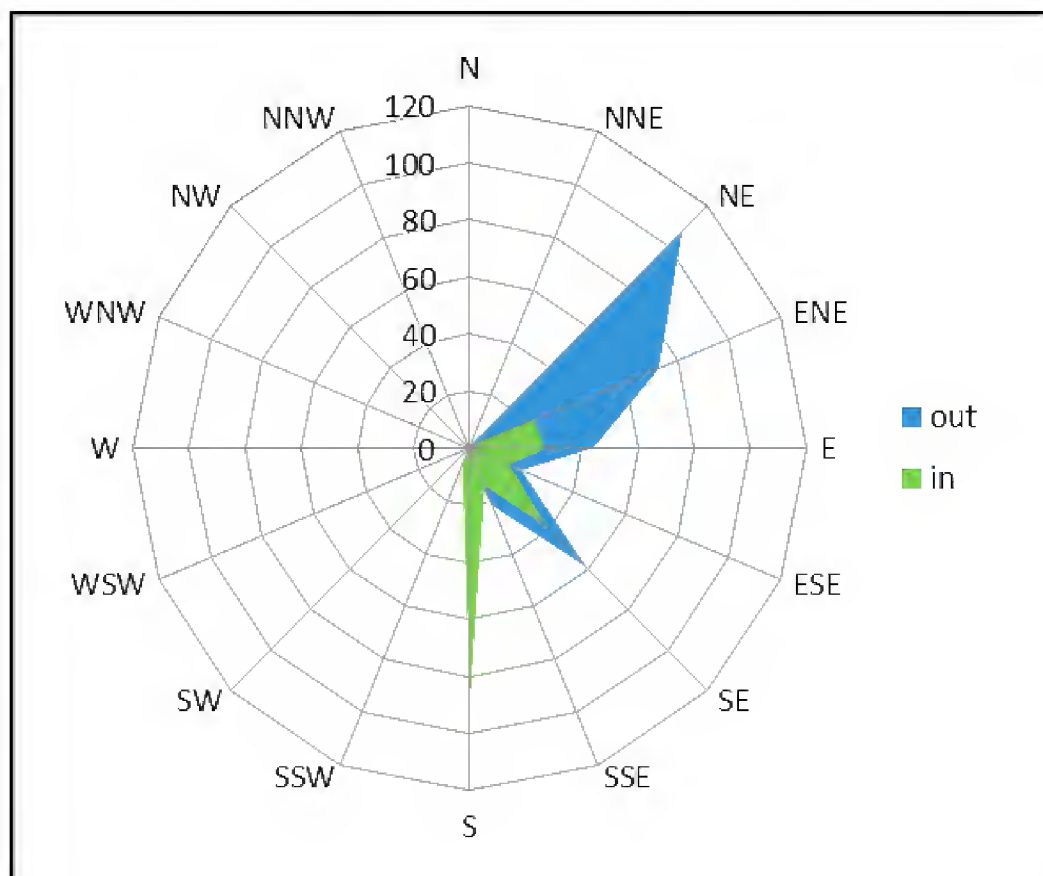


Figure 5. Direction of Clarke's Weavers leaving and entering the colony.

The general pattern was for the adults to arrive at the colony carrying food, mostly alone or in pairs, or uncommonly in groups of three or four. They would arrive with a food item and perch on top of a sedge, normally near the edge of the colony, where they would sit looking around for up to about 30 seconds before moving mostly only 0.5–2 m, where they would immediately disappear into the sedges, presumably to their nests—the nest hole entrance was not visible to an observer at the edge of the wetland.

On emerging from the nest, adults would perch on top of the nest or on a nearby sedge to preen or just to look around for a few minutes. Less commonly, an adult would emerge and fly some metres to the edge of the colony where it would sit. Then, without warning, a flock of usually between 20 and 50 birds would take off from across the colony and fly low over the sedges, gaining height to skim over the surrounding trees and leave for the foraging grounds.

Food for the young

All food items brought to the nests were insects, and most (c. 60% of items observed) were larvae of varying sizes. Other insects observed included grasshoppers and crickets (Figs. 6 & 7).



Figure 6. Male Clarke's Weaver bringing larva to the nest (photo C. Jackson).



Figure 7. Female Clarke's Weaver perched on top of nest carrying a cricket to feed chicks (photo C. Jackson).

Discussion

The overall breeding behaviour of Clarke's Weaver was typical of a *Ploceus* weaver of the 'Type 2' pair-formation style, where the female is attracted to the male which displays and sings while centred on the nest (Crook 1964, Craig 2010). However, some key differences stand out:

1. The nesting and foraging habitats are completely different from each other, although closely interspersed within a mosaic of different habitat types.
2. Both males and females take part in constructing the nest and feeding the young, which is not usually the case in colonial weavers.
3. The timescale for nest-building, egg-laying, hatching and fledging is relatively short, an estimated 24–30 days in total, which would be consistent with a species exploiting a seasonal wetland.
4. The colony was very restricted within the overall available area of sedges and had a high density of nests. The nests were all hidden within the relatively low vegetation of the sedges.

Clarke's Weaver is restricted to the Arabuko-Sokoke Forest and the Dakatcha Woodlands. Of these, only the former has any form of legal protection and even this is under constant threat as proven by recent attempts to carry out oil exploration inside the forest without any consultation with stakeholders and conservationists (Starkey 2014). Dakatcha Woodlands is an extensive patchwork of forest, woodland, numerous small seasonal and permanent wetlands, scrub, thicket and in recent years, more and more agricultural land. The species ranges widely across these two sites, spending most of its time in the *Brachystegia* habitat (Zimmerman *et al.* 1996), where it forages. However, protection of its breeding sites is crucial if the species is to be conserved.

Since the breeding event described here, no further colonies have been located despite searching. In January 2014 Arbamukenge was completely dry (FN pers. obs.) and there was no sign of Clarke's Weavers in the area. Clearly the mystery of the Clarke's Weaver breeding is far from being fully solved.

The observation of fledged juveniles being fed by adults during January to February had led several observers to believe the weavers would breed in November and December during the short rains. Other previous observations of juveniles being fed by adults were during April and as late as 18 July (Jackson 2011), which strongly suggests that Clarke's Weavers may be somewhat opportunistic in the timing of their breeding. They may breed either during the long rains (March–June) or the short rains (November–December) – or possibly both.

One of the prerequisites for a breeding site may be standing water below the sedges where the nests are built – a common feature of weaver colonies (Craig 2010). Breeding also probably requires good rains to flood the wetlands and to allow the sedges to grow sufficiently to support the nests. Heavy rain in December 2012 with subsequent showers through early 2013 meant that the Arbamukenge wetland was flooded, thus providing the required conditions for successful breeding.

At the time of this breeding event the *Brachystegia* trees were in full blossom and with fresh leaf growth, providing excellent conditions for insects and thus an abundant food source for the weavers, which also feed on the fresh leaves of *Brachystegia* (CJ pers. obs., D. Ngala and T. Butynski pers. comm.). During an expedition to Dakatcha in November 1995, Clarke's Weavers were seen in juvenile plumage (though none being fed by adults) and it was noted that the *Brachystegia* had fresh leaf growth and blossoms (T. Butynski pers. comm.).

Male Clarke's Weavers appear to moult out of their black-headed plumage into a female-type non-breeding plumage between July and October (CJ in press), as is typical of many colonial weaver species (Fry & Keith 2004, Craig 2010). This would limit the possibility for rapid opportunistic breeding.

The conservation of Clarke's Weavers

Nature Kenya and the Dakatcha Woodland Conservation Group took a strong lead in engaging with the local community around the Arbamukenge wetland. There has been good willingness on the part of the community to help protect these small wetlands, which gives hope for the future of Clarke's Weavers, but sustained effort is needed to maintain the community's motivation. In a token of appreciation, the Bird Committee of the East Africa Natural History Society donated a water harvesting system to the nearby school.

The breeding event described here can only give indications of when and where Clarke's Weavers breed, providing pointers for future searches. In 2014 a thorough search was made during March and April, but no signs of breeding were found. We need to know much more about the breeding of Clarke's Weavers and their requirements for breeding, foraging and roosting if we are to succeed in protecting them effectively.

Acknowledgements

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Addendum

In 2015, a long dry season in January to March was followed by heavy rains in April. On 9 May 2015, JM and JG of Dakatcha Woodland Conservation Group (DWCG) found about 80 Clarke's Weavers, males and females, constructing nests in a sedge-filled pool in the seasonal Gandhi River (2° 53.48'S, 39° 52.37'E). This second known breeding site was observed further on 21 May when FN, JM and a DWCG-Nature Kenya team observed male and female Clarke's Weavers bringing insect food to the young in the nests.

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Birds of Mount Kisingiri, Nyanza Province, including a preliminary survey of the Gwasssi Hills Forest Reserve and a species new to Kenya

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Summary

Mount Kisingiri comprises a much overlooked highland massif in southern Nyanza Province with a hitherto completely unknown avifauna. Here we detail our findings from three brief exploratory visits undertaken between 2011 and 2014, with a focus on forested habitats above 1800 m in the Gwasssi Hills Forest Reserve (GHFR). We confirm the presence of 34 forest-dependent species, including a globally near threatened forest raptor, the Crowned Eagle *Stephanoaetus coronatus*, as well as the first known occurrence of the Western Citril *Crithagra frontalis* in Kenya. Including noteworthy species recorded from other, non-forested areas at lower elevations on the volcano, we provide 46 new or updated (post-1970) distributional records for these two quarter degree atlas squares (60A and 60C). Estimates of species detection probability and abundance, a comparison of forest-dependent species between logged and unlogged sites, and a coarse assessment of overall forest integrity, reveal a highly threatened forest bird community with apparently dwindling numbers of forest specialists. Lastly, we confirm continuing and rapid deforestation in the GHFR and highlight the pressing need for improved forest management and more thorough biodiversity surveys of extant forest.

General study area description

Mount Kisingiri (0°36'S, 34°8'E) is a 13-km wide dormant caldera, situated on the shores of Lake Victoria immediately to the west of the Lambwe Valley in southern Nyanza Province (Fig. 1). With Miocene origins (Allsop & Baldry 1972), it is also one of the older highland massifs in Kenya and marks the westernmost extent of the Kavirondo fault. Portions of the crater rim that remain today, and comprise two of the three main highland areas, include the 2260-m Gwasssi Hills in the south and east, and the 1880-m Gembe Hills in the north. A third highland block rising to 1730 m from the approximate centre of the crater floor and not surveyed as part of this study, is a volcanic plug called Rangwe. Nowhere else in the Lake Victoria basin does shoreline-adjacent terrain rise to such altitudes as at Mt Kisingiri, and highlands of a similar altitude are no closer than the Kisii area, 80 km to the east.

The slopes of Mt Kisingiri are typically steep, particularly those inside of the crater, and in places cliffs of up to 40 m in height add variety to the topography. Precipitation in the towns of Magunga and Mbita at the eastern and northern base of the volcano respectively peaks in March to May and September to December, and measures

approximately 1400 mm annually (World Weather Online 2014). Numerous streams drain the volcano's flanks in a radial pattern and the hills comprise an important water catchment for communities living on the densely farmed plains below.

As recently as the 1970s, the western third of the Gwasssi Hills Forest Reserve (GHFR) comprised an extensive and varied closed-canopy forest (e.g. >70% canopy cover), covering approximately 2000 ha (the eastern two-thirds support drier, non-forested habitats). Significant forest degradation was first noticeable by the early 1980s and pre-empted the first of several evictions of squatters inside the forest (B. Oyungu pers. comm.). Nonetheless, tree felling continued, further damaging the higher forests, while land clearance for farming encroached on the lower forest margins. Following three decades of heavy human pressures, true forest habitats in the GHFR are now both fragmented and much reduced in extent. However, patches of relatively undisturbed forest that remain today, set amid variably logged terrain (canopy cover 20–70%) and second-growth at a range of successional stages, collectively form a diverse forest mosaic landscape. Depending on the altitude, aspect and slope gradient, vegetation characteristics vary considerably, from humid to semi-humid, short to tall, and comparatively open to very dense. A floral inventory has been compiled (O. Ong'ang'a pers. comm.), and forest vegetation is reported to show strong affinities with the forests of Kakamega and the Nandi Hills (GHFCA 2009).

Methods

Study sites

During the course of our study in the GHFR, bird surveys were concentrated in four general areas (see relative effort at each site below), all reached on foot from the road-accessible town of Kisaku at 1800 m on the southern slopes. These sites (Fig. 1), which we describe in more detail below, are named after drainages or locations described in the Gwasssi Hills Draft Forest Management Plan (GHFCA 2009) and cover a range of altitudes and forest types. Dominant plant species were noted when recognized, and species nomenclature follows Dharani (2011). Forest tree species reported to occur in the GHFR (GHFCA 2009) but which we did not encounter and may be preferentially logged include *Antiaris toxicaria*, *Bridelia micrantha*, *Euclea divinorum*, *Harungana madagascariensis* and *Milicia excelsa*.

Mwing'ore (40% relative effort, 9 ha; Fig. 2): a humid and heavily disturbed headwater site at the bottom of a steep south-facing valley at 1870–1950 m. The canopy cover of 20–30% consists of remnant trees interspersed with reasonably well-developed secondary growth, a thick leafy understorey and abundant hanging creepers and vines. Dominant forest trees, mostly less than 20 m in height, include *Ficus sur*, *Celtis africana* and *Polyscias fulva*, with smaller numbers of *Albizia gummifera*, *A. coraria*, *Croton macrostachyus*, *Macaranga kilimandscharica* and *Trichilia emetica*. Understorey species include *Acanthus eminens*, *Cyathea manniana*, *Dombeya burgessiae*, *Dracaena steudneri* and morning glory (Convolvulaceae sp.).

Kumuruga (35% relative effort, 6.5 ha; Fig. 3): a semi-humid and less disturbed ridgetop site at 2060–2110 m. The canopy cover of 90–100% is approximately 15–20 m high, with a dark and fairly open understorey containing small evergreen saplings, woody vines and a heavy layer of leaf litter. Dominant forest trees include *Catha edulis*, *Celtis africana* and *Vepris nobilis*, with smaller numbers of *Polyscias fulva*, *Prunus africana* and *Sapium ellipticum*. Woody vegetation in the understorey included *Carissa edulis*, *Ficus exasperata*, and *Rhus natalensis*. Where the terrain drops steeply to the east

(and elsewhere on the steepest slopes), *Catha edulis* forms uniform stands of 10–15 m in height, and is probably the most abundant forest tree in the hills. Between 2011 and 2014 alone, 30% of this small forest fragment was removed for timber and/or charcoal production.

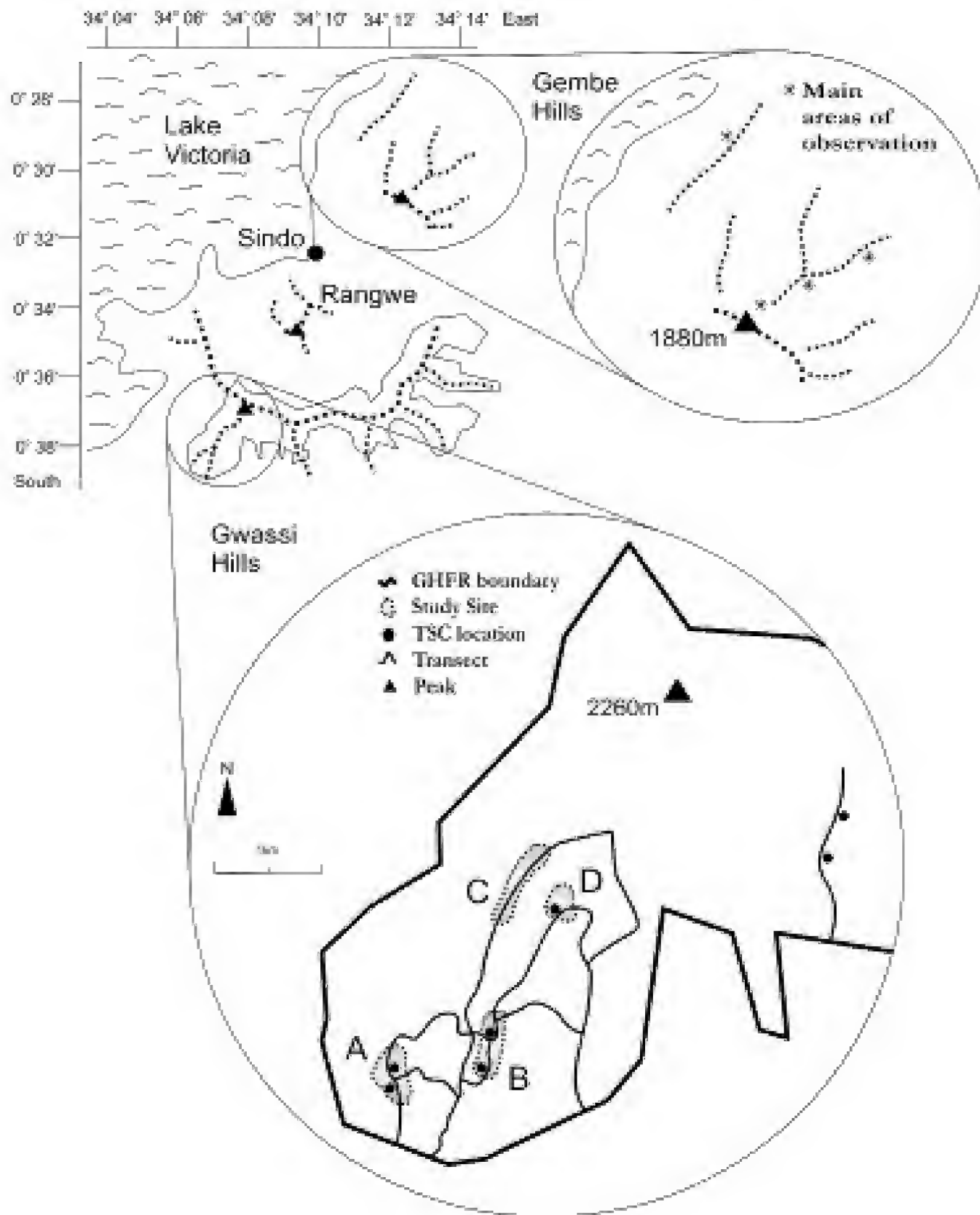


Figure 1. Map of the Kisingiri crater and major ridgelines (top left), showing Lake Victoria, Sindo Town, the northern crater rim (Gembe Hills), central plug (Rangwe), southern Crater Rim (Gwassi Hills) and Gwassi Hills Forest Reserve (solid line). Inset maps (with legends) show the Gembe Hills and main observation points (top right), and the Gwassi Hills Forest Reserve, transect and timed species count locations, and study sites as follows: A–Mwing’ore, B–Kumuruga, C–Rianguge, D–Magama (bottom).



Figure 2. Heavily disturbed and selectively logged habitat at 1900 m on the valley side at Mwing'ore, February 2012.



Figure 3. Relatively undisturbed evergreen and semi-evergreen forest habitat on steep slopes at Kumuruga, February 2012. Gaps visible between the trees on the ridgetop at approximately 2100 m illustrate the damaged character of forest on higher and flatter ground.

Rianguge (10% relative effort, 9.5 ha; Fig. 4): a cooler and very humid ridgetop site on less steeply sloping terrain from 2070 to 2140 m, with vegetation characteristics not dissimilar to Mwing'ore. As is the case along most of the ridgeline, the forest has been heavily logged and comprises a cover of 20% or less, with only a few scattered and commercially unviable tree species remaining amid a dense layer of secondary growth. These remnant forest trees include *Albizia gummifera* and *Polyscias fulva*, with smaller numbers of *Cussonia spicata*, young *Croton macrostachyus* and *Dombeya goetzenii*, as well as some magnificent remnant *Ficus thonningii* reaching 25–30 m in height. Second growth species include abundant *Neoboutonia macrocalyx* and *Dombeya* spp. as well as *Dracena steudneri*, *Solanum* sp., *Ricinus communis* and in places, invasive *Pteridium aquilinum*. One or more *Eucalyptus* sp. are established throughout this and other heavily disturbed areas, and on higher westward-facing slopes here (>2100 m), abundant “old man’s beard” hangs from the trees.

Magama (15% relative effort, 5 ha; Fig. 5): a humid, less disturbed and floristically rich headwater site on slopes adjacent to recently abandoned farmland at approximately 2030–2080 m. The canopy cover of 70–80% includes abundant hardwood trees, some reaching over 30 m in height. Dominant species include *Prunus africana*, *Trichilia emetica* and *Vepris nobilis*, with smaller numbers of *Albizia* spp., *Catha edulis*, *Celtis africana*, *Diospyros abyssinica* and *Polyscias fulva*. The understorey is variable, being dark, and open in places, but mostly cluttered with *Dombeya burgessiae*, *Neoboutonia macrocalyx* and morning glory (*Convolvulaceae* sp.) where light penetrates the highly stratified canopy. This area of forest remained relatively unaffected by illegal tree felling during the period of this study.



Figure 4. Heavily logged and disturbed ridgetop forest and secondary growth at 2100 m at Rianguge, February 2012.



Figure 5. Tall and humid forest at approximately 2050 m at Magama is floristically rich with a highly stratified canopy, November 2014.

Data collection

We collected information on the avifauna of Mt Kisingiri, and primarily the GHFR, during three visits: 18–19 January 2011 (JB), 21–24 February 2012 (JB and DB) and 1–6 November 2014 (JB and TI). Surveys in the GHFR were conducted on nine separate days, covering a total of 47.5 km on foot (Fig. 1). Due to challenging access conditions, only a limited amount of time was spent at the highest areas above 2100 m. We also made casual observations on birds in the non-forested Gembe Hills, as well as at lower elevations outside of the forest reserve in the Gwasssi Hills, during several short visits on five separate days. Data were collected as follows:

- 1) We considered each day-visit to the GHFR as a discreet survey unit and the routes walked on each of those visits as a transect. For each transect (day-visit) we recorded the distance covered, the number of times a species was encountered, the total number of individuals detected as well as additional notes on breeding activity. Transects included both return-routes and circuit routes.
- 2) In 2014, limited mist-netting was conducted to sample understorey species in the GHFR. We conducted three morning and three afternoon mist-netting sessions from 2 to 5 November using 2–5 nets (nets of 8–12 m used variably), with most effort at Mwing'ore (480 net-metre h) and less effort at both Kumuruga (152 net-metre h) and Magama (108 net-metre h). Birds were fitted with Ringing scheme of eastern Africa rings, and standard biometric measurements and details of breeding condition were recorded.
- 3) In 2014, we conducted ten timed species counts (TSCs) at seven count stations (see Fig. 1) in the GHFR, to provide an additional index of species detection probability and relative abundance. Timed species counts followed Pomeroy & Tengetcho (1986), but were adapted from four 15-min count periods to four 10-min periods, and all birds detected were included instead of only those within 20 m.
- 4) On visits to all areas, but primarily in the GHFR in 2012 and 2014, both targeted and automated audio recording was used to confirm the presence of species, which may have been unidentified or overlooked in the field.

Data analysis

We derived estimates of detection probability as a proportion of either the total number of transects (n = 9) or TSCs (n = 10) on which a species was recorded. Estimates of relative abundance (commonness) from transect data were derived by multiplying the mean number of individuals recorded per transect-day by the number of transect days on which that species was actually recorded. Estimates of relative abundance from TSCs (Pomeroy & Tengecho 1986) were made by ranking the species according to the count period (1–4) in which the species was detected, before tallying the rank numbers and averaging across the total number of TSCs. This method assumes that more abundant species will be recorded earlier in the TSC. Species were also classified according to ecological niche as Forest Specialists, Forest Generalists, Forest Visitors (as per Bennun *et al.* 1996), or Non-forest Species. We compared the presence/absence of representatives from each of the two forest-dependent groups (specialists and generalists) across both heavily disturbed and relatively undisturbed forest sites to assess general forest health in the GHFR. Species density is also widely used as a proxy for habitat quality (Fuller 2012), and we made further inferences about forest health by comparing the relative abundance of forest generalists with forest specialists.

Results and discussion

Mist-netting

In total, 16 individuals representing ten species were captured and ringed during 740 net-metre h (Table 1). Including an additional three birds captured but not ringed, this represents a capture rate of 1 bird per 38.9 net-metre h. All ringed birds were captured at Mwing'ore.

Table 1. Species trapped and ringed in the GHFR, 2–5 November 2014. *Indicates an adult with a vascularized or recently vascularized brood patch, indicative of active breeding.

Species	# Adults	# Juveniles / Immatures	Not ringed
Tambourine Dove <i>Turtur tympanistria</i>	1		
Narina Trogon <i>Apaloderma narina</i>			1
African Paradise Flycatcher <i>Terpsiphone viridis</i>	1		
Grey-capped Warbler <i>Eminia lepida</i>	1		
Grey-backed Camaroptera <i>Camaroptera brachyura</i>	1		
Yellow-whiskered Greenbul <i>Andropadus latirostris</i>	2*	1	
Cabanis's Greenbul <i>Phyllastrephus cabanisi</i>	3	2	1
Garden Warbler <i>Sylvia borin</i>	1		
Blackcap <i>Sylvia atricapilla</i>	1		
Red-capped Robin Chat <i>Cossypha natalensis</i>	1		1
Green-headed Sunbird <i>Cyanomitra verticalis</i>	1*		

Species richness and abundance in the GHFR

In total, we detected 92 bird species inside the GHFR: 89 during transect observations, and an additional three detected only during TSCs (see Appendix 1 for a full species list for Mt Kisingiri). Of the 92 species recorded, 34 were forest dependent, of which 13 were forest specialists and 21 were forest generalists. The remaining 58 species

comprised 32 forest visitors and 26 non-forest species (Bennun *et al.* 1996). This is a little more than one-third of the number of forest-dependent species recorded in the nearby Trans Mara Forest (Bennun 1991), and quite rich for an isolated and comparatively small forest.

Coarse estimates of abundance for species recorded on three or more visits show that Grey-backed Camaroptera *Camaroptera brachyura*, Tropical Boubou *Laniarius aethiopicus* and Common Bulbul *Pycnonotus barbatus*, all birds that adapt well to disturbed habitat, are the three commonest species (Table 2). While it seems likely that our surveys overestimate the abundance of Tropical Boubou as a result of its far-carrying song, these were noticeably abundant here relative to other western Kenyan forests (pers. obs.). The abundance of these three species, and the presence of many more forest generalists compared to forest specialists (21 vs. 13), is typical of a forest ecosystem characterized by an abundance of secondary growth and edge habitats. The higher abundance of forest generalists was also reflected in the detection probabilities, with 50% of forest generalists and 38% of forest specialists detected on three or more of the nine survey days.

Confirmed breeding records in the GHFR

We confirmed breeding for nine species inside the GHFR as follows:

Wahlberg's Eagle *Aquila wahlbergi* – adult defending nest in February 2012 and sitting on nest in November 2014

Crowned Eagle *Stephanoaetus coronatus* – recently fledged juvenile in January 2011

Grey Apalis *Apalis cinerea* – recently fledged young in February 2012

Yellow-whiskered Greenbul *Andropadus latirostris* – immatures seen and ringed in November 2014

Cabanis's Greenbul *Phyllastrephus cabanisi* – juvenile ringed in November 2014

White-eyed Slaty Flycatcher *Melaenornis fischeri* – immature with buff-spots on the wings in November 2014

Collared Sunbird *Hedydipna collaris* – recently fledged young in November 2014

Green-headed Sunbird *Cyanomitra verticalis* – female with brood patch in November 2014

Spectacled Weaver *Ploceus ocularis* – nest building in November 2014

Additionally, the following two species were confirmed breeding immediately adjacent to the forest reserve:

Common Fiscal *Lanius collaris* – recently fledged young in January 2011

Brimstone Canary *Crithagra sulphurata* – recently fledged young in November 2014.

Table 2. Indices of species detection probability and relative abundance for common species in the GHFR; TSC = Timed species counts

Species	Transect detection probability (%)	Transect abundance index	TSC detection probability (%)	TSC abundance index
Grey-backed Camaroptera <i>Camaroptera brachyura</i>	100	90.00	100	4.0
Tropical Boubou <i>Laniarius aethiopicus</i>	100	67.00	100	4.0
Common Bulbul <i>Pycnonotus barbatus</i>	100	61.00	90	3.2
Blackcap <i>Sylvia atricapilla</i>	100	50.00	10	0.3
Northern Double-collared Sunbird <i>Cinnyris reichenowi</i>	100	50.00	100	3.5
Yellow-whiskered Greenbul <i>Andropadus latirostris</i>	100	39.00	100	3.7
Red-faced Cisticola <i>Cisticola erythrops</i>	100	39.00	10	0.4
Cabanis's Greenbul <i>Phyllastrephus cabanisi</i>	100	33.00	50	1.5
Common Buzzard <i>Buteo buteo</i>	89	47.11	20	0.6
Ross's Turaco <i>Musophaga rossae</i>	89	30.22	20	0.5
Brown-throated Wattle-eye <i>Platysteira cyanea</i>	89	17.78	60	1.7
White-bellied Tit <i>Parus albiventris</i>	89	16.89	60	1.4
Collared Sunbird <i>Hedydipna collaris</i>	89	16.00	80	2.1
Yellow-rumped Tinkerbird <i>Pogoniulus bilineatus</i>	89	15.11	60	2.0
Spectacled Weaver <i>Ploceus ocularis</i>	89	9.78	20	0.5
Grey Apalis <i>Apalis cinerea</i>	78	35.00	90	2.9
African Yellow White-eye <i>Zosterops senegalensis</i>	78	31.11	50	1.7
Red-capped Robin Chat <i>Cossypha natalensis</i>	78	17.11	80	2.8
Black-backed Puffback <i>Dryoscopus cubla</i>	78	15.56	60	1.9
White-eyed Slaty Flycatcher <i>Melaenornis fischeri</i>	78	15.56	10	0.1
Baglafecht Weaver <i>Ploceus baglafecht reichenowi</i>	78	12.44	30	0.8
Cardinal Woodpecker <i>Dendropicos fuscescens</i>	78	7.00	20	0.5
Augur Buzzard <i>Buteo augur</i>	67	7.33	20	0.3
Wahlberg's Eagle <i>Aquila wahlbergi</i>	67	6.00	10	0.4
Klaas's Cuckoo <i>Chrysococcyx klaas</i>	67	5.33	20	0.5
Rock Martin <i>Ptyonoprogne fuligula</i>	67	5.33		
Sharpe's Starling <i>Pholia sharpii</i>	56	12.22	10	0.1
Tambourine Dove <i>Turtur tympanistria</i>	56	10.00	40	1.2
White-headed Saw-wing <i>Psadiloprocne albiceps</i>	56	9.44	10	0.2
Grey-capped Warbler <i>Eminia lepida</i>	56	9.44	90	3.4
Amethyst Sunbird <i>Chalcomitra amethystina</i>	56	9.44	30	0.8
Western Citril <i>Crithagra frontalis</i>	56	7.78		
Narina Trogon <i>Apaloderma narina</i>	56	5.33	30	0.8
Red-eyed Dove <i>Streptopelia semitorquata</i>	56	3.33		
Bronze Sunbird <i>Nectarinia kilimensis</i>	44	5.78	10	0.1
African Paradise Flycatcher <i>Terpsiphone viridis</i>	44	3.11	60	2.1
Black Cuckooshrike <i>Campephaga flava</i>	44	1.78		
Common Fiscal <i>Lanius collaris</i>	44	1.78	10	0.2
Slender-billed Greenbul <i>Andropadus gracilirostris</i>	44	1.78		
Garden Warbler <i>Sylvia borin</i>	44	1.78		

Species	Transect detection probability (%)	Transect abundance index	TSC detection probability (%)	TSC abundance index
Red-rumped Swallow <i>Cecropis daurica</i>	33	3.67		
Speckled Mousebird <i>Colius striatus</i>	33	3.33	20	0.5
Willow Warbler <i>Phylloscopus trochilus</i>	33	3.33		
Black-billed Weaver <i>Ploceus melanogaster</i>	33	2.67	10	0.1
Blue-spotted Wood Dove <i>Turtur afer</i>	33	1.67		
White-browed Coucal <i>Centropus superciliosus</i>	33	1.33	40	0.7
White-browed Robin Chat <i>Cossypha heuglini</i>	33	1.33	10	0.4
Long-crested Eagle <i>Lophaetus occipitalis</i>	33	1.00		
Brown-crowned Tchagra <i>Tchagra australis</i>	33	1.00		
Scarlet-chested Sunbird <i>Chalcomitra senegalensis</i>	33	1.00	30	1.2
Yellow-bellied Waxbill <i>Coccothraustes vespertina</i>	33	1.00		
Tree Pipit <i>Anthus trivialis</i>	33	1.00		

Probable breeding in the GHFR

We considered species as probable breeders in the GHFR, based on three criteria: (1) display behaviour of males or pairs during the breeding season (as per Brown & Britton 1980); (2) the presence of multiple (>4) territorial counter-singing males; and (3), a sedentary life history, and/or geographic isolation and habitat specialization (i.e. forest dependence). Those species which meet the last criterion, but were found in low abundance and therefore may not be breeding successfully were not included. The following species were probable breeders: Tambourine Dove *Turtur tympanistria*, Ross's Turaco *Musophaga rossae*, White-browed Coucal *Centropus superciliosus*, Speckled Mousebird *Colius striatus*, Narina Trogon *Apaloderma narina*, Yellow-rumped Tinkerbird *Pogoniulus bilineatus*, Cardinal Woodpecker *Dendropicos fuscescens*, Brown-throated Wattle-eye *Platysteira cyanea*, Black-backed Puffback *Dryoscopus cubla*, Tropical Boubou, White-bellied Tit *Parus albiventris*, Rock Martin *Ptyonoprogne fuligula*, Red-faced Cisticola *Cisticola erythrops*, Chubb's Cisticola *C. chubbi*, Grey-capped Warbler *Eminia lepida*, Grey-backed Camaroptera, Common Bulbul, African Yellow White-eye *Zosterops senegalensis*, Red-capped Robin Chat *Cossypha natalensis*, Amethyst Sunbird *Chalcomitra amethystina*, Northern Double-collared Sunbird *Cinnyris reichenowi*, Baglaffeht Weaver *Ploceus baglaffeht reichenowi*, Black-billed Weaver *P. melanogaster*.

Palaeartic migrants

The highland topography of Mt Kisingiri appears to provide benefits to a number of Palaeartic migrants. Birds of prey, in particular Common Buzzard *Buteo buteo*, clearly make use of the slopes and ridges on migration, as well as possibly the wooded and forested areas for roosting. Similar concentrations of this species have been observed previously in the eastern Lake Victoria Basin, and this observation fits well with a known autumn migration flyway around the eastern edge of Lake Victoria from Mt Elgon south to northern Tanzania for this species (Britton 1980). Passerine migrants are generally not well represented on Mt Kisingiri but the GHFR may contain important winter habitat for Blackcap *Sylvia atricapilla* and possibly an important refuge for Willow Warbler *Phylloscopus trochilus* during very dry periods.

This species was especially abundant in January 2011 when surrounding lower altitudes were very dry, but it was largely absent on other visits when the region was wetter.

Comparison with other forest and highland bird faunas

Although our surveys were of limited extent and our species list is undoubtedly incomplete, the following points can be made about Mt Kisingiri's avifaunal affinities:

- (1) All of the forest dependent species we recorded in the GHFR are also known to occur in the Kakamega-Nandi Forest block, 115 km to the northeast. However, some species more characteristic of montane habitats are absent (Black-fronted Bushshrike *Chlorophoneus nigrifrons*) or scarce (Sharpe's Starling *Pholia sharpii* and White-browed Crombec *Sylvietta leucophrys*) below 1700 m in Kakamega Forest, being commoner or more characteristic above 1800 m in the Nandi forests (Britton 1980, Lewis & Pomeroy 1989, eBird 1991, Zimmerman *et al.* 1996, Shanni & Bruijn 2006).
- (2) Most of the forest-dependent species in the GHFR have also been recorded from the Nyakweri Forest and other forest patches in the Lolgorien area 110 km to the southeast (eBird 1991, Zimmerman *et al.* 1996). Species not yet recorded from there, but which we found to occur in the GHFR include Chubb's Cisticola, White-browed Crombec, Sharpe's Starling and Black-billed Weaver.
- (3) With the exception of Least Honeyguide *Indicator exilis*, all of the forest dependent species we recorded in the GHFR can also be found in the forests of Mt Elgon (Lewis & Pomeroy 1989, Zimmerman *et al.* 1996), another, though less isolated volcano on the periphery of the West Kenyan highlands. Given that the honeyguide has been recorded only 35 km away at Kapenguria, and may well occur undetected at Mt Elgon, this mountain appears to support a bird fauna most similar to that of Mt Kisingiri.
- (4) An assemblage of non-forest species at Mt Kisingiri, occurring in grass and bush habitats on steep and rocky slopes, also bears a close similarity with that found in the Nandi and Lolgorien areas. Several characteristic but local species of these habitats, including Rock-loving Cisticola *Cisticola emini*, Familiar Chat *Cercomela familiaris*, Little Rock Thrush *Monticola rufocinereus* and Long-billed Pipit *Anthus similis* are also known from steep slopes separating high plateaux from adjacent lowlands at both the Kavirondo Escarpment, 100 km to the northeast (Bradley & Bradley 2014), and the Oloololo Escarpment, 115 km to the southeast (eBird 1991, Zimmerman *et al.* 1996).

Birds species in logged vs. unlogged forest

The canopy characteristics and tree species composition of our sites permits a coarse comparison between the presence/absence of forest dependent species in heavily logged and disturbed forests (Mwing'ore and Rianguge) versus mostly unlogged and relatively undisturbed forests (Kumuruga and Magama). While this comparison showed a strong positive association between the presence of forest specialists versus forest generalists at unlogged sites (Table 3), as might be expected, the difference was not statistically significant (two-tailed Student *t*-test; $t = 3.35$, $P = 0.07$).

Table 3. Relative presence/absence of forest specialists and forest generalists at disturbed and undisturbed sites.

	Heavily disturbed forest			Relatively undisturbed forest		
	Mwing'ore	Rianguge	combined	Kumuruga	Magama	combined
Relative effort (% time)	40	10	50	35	15	50
Approximate canopy cover (%)	30	20	--	90	70	--
# Forest dependent species (total)	19	12	22	20	18	26
Generalists	13	9	14	11	10	14
Specialists	6	3	8	9	8	12
Ratio (Generalist : Specialist)	2.2 : 1.0	3.0 : 1.0	1.8 : 1.0	1.2 : 1.0	1.3 : 1.0	1.2 : 1.0

Ranking and comparing the relative abundance of species within the two forest dependent niches (generalists and specialists) also permits a coarse appraisal of forest ecosystem integrity. We found that across the GHFR, the relative abundance of forest generalists appeared normal, as might be expected in an environment characterized by an abundance of secondary growth and forest edge habitat (Fig. 6). Approximately a quarter of the species recorded were considered very abundant, a quarter of moderate abundance, and the remaining half were rare. However, among forest specialists, relative abundance was distorted, with only a quarter of species being quite common or moderately so, with the remaining three quarters being very rare. This imbalance in relative species abundance within a defined ecological niche could be interpreted as an early warning sign that disturbance to forest interior ecosystems in the GHFR is compromising the viability of forest specialist bird populations.

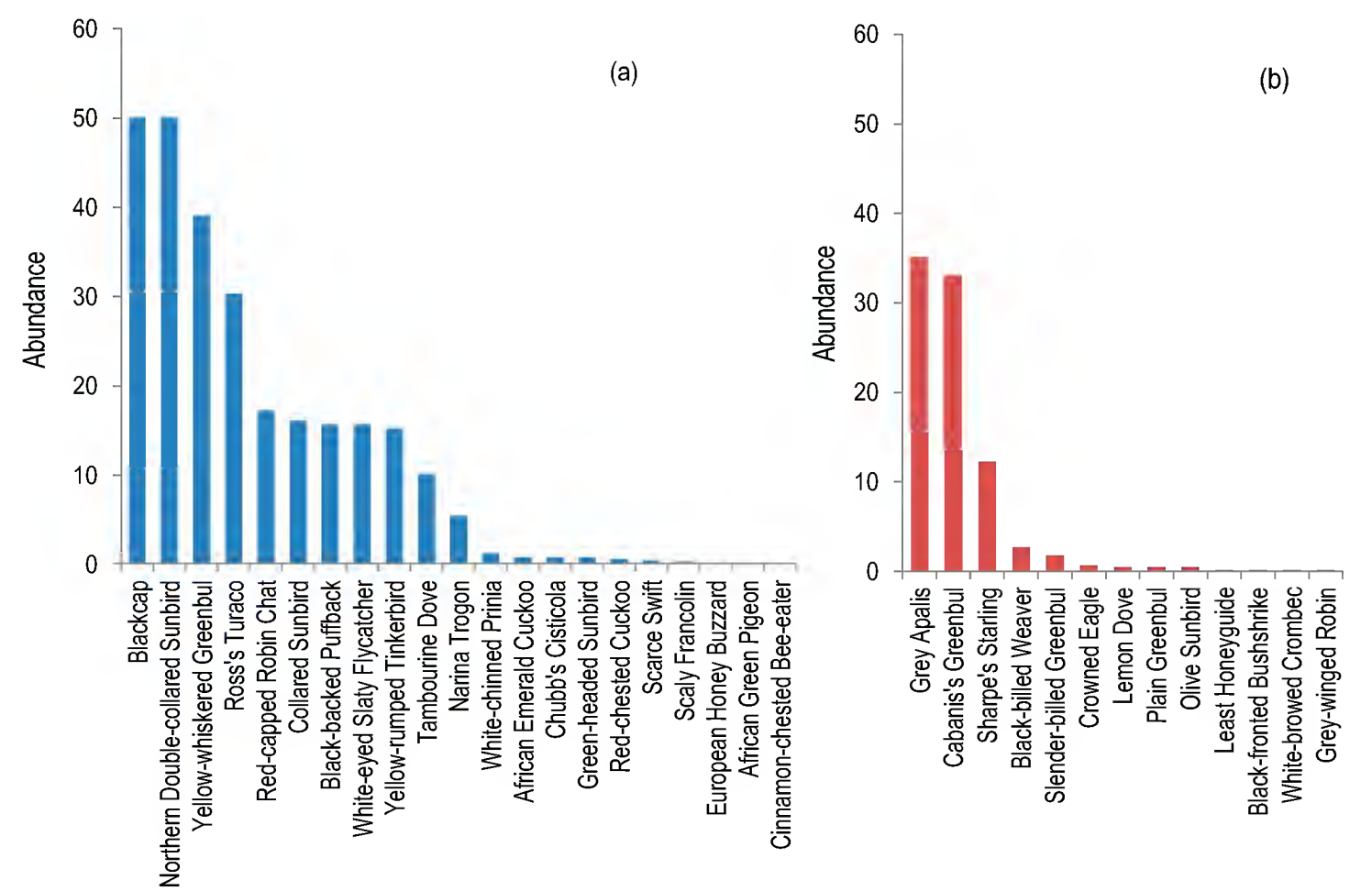


Figure 6. Ranked relative abundance of (a) forest generalists and (b) forest specialists in the Gwass Hills Forest Reserve.

Forest health, threats and management

Our assumptions of deteriorating forest integrity based on bird species occurrence and abundance, are also supported by field observations and satellite imagery. We found that most of the well differentiated and floristically rich forest above 1800 m has been heavily logged, with intact and less disturbed fragments largely restricted to steeper slopes and the most remote headwaters. Removal of trees has been highly selective, targeting the tallest and most commercially desirable hardwood species on the flatter ridgetops and summit. Much of these areas are now characterized by widely spaced and commercially unviable tree species interspersed with thick and creeper-laden secondary growth.

Using satellite imagery and simple, polygon-based arial measurements in GIS (Quantum GIS 2.6.1; <http://www.qgis.org/en/site/#>), we calculated that intact, or near-intact closed canopy forest (i.e. >70% canopy cover) now covers less than 250 ha of the GHFR. This cumulative measurement of forest area can be divided between roughly nine main fragments ranging in size from 5 to 110 ha, with the two largest fragments, also the least diverse floristically, covering approximately 170 ha of the near-inaccessibly steep crater walls. Our estimate is comparable with that reported in the Gwasssi Hills Draft Forest Management Plan equating to 93–95% forest loss since 1980 (GHFCA 2009).

Land-use activities currently contributing to forest loss and degradation inside the GHFR are numerous and pervasive. We observed the continued felling of trees, many over 25 m tall, for their value as both timber and fuel, and much of which is organized to supply markets in the densely populated surroundings as far as Kisumu (B. Oyungu pers. comm.). Large trees are also felled only to harvest honey from natural bee hives, with the destroyed tree unused. Natural forest regeneration is hindered through periodic burning of damaged forest, repeated clearance of small patches for illicit distilleries or crop cultivation, and grazing of cattle along the few watercourses. The typically thick and creeper-laden layer of secondary growth resulting from this high level of disturbance is also thought to present a physical impediment to the recruitment of forest trees (GHFCA 2009). On a wider scale, forest loss is thought to be responsible for increasingly intermittent and unreliable discharge from streams draining the GHFR (B. Oyungu pers. comm., GHFC 2009).

Administration of the GHFR is undertaken by the Kenya Forest Service, with support from local and regional-based community conservation groups. A well-conceived management plan has been written, but implementation appears to be slow and intermittent due to equipment and funding shortages. From our observations, three principal limitations are evident, all of which point to an enforcement presence in and immediately surrounding the forest reserve that is insufficient to deter continuing illegal forest exploitation:

- (1) Resources are not being allocated such that forest patrols can be conducted on anything more than a sporadic basis;
- (2) A patrol of only four forest officers is too few to effectively counter the numerous illegal activities across the entire forest reserve;
- (3) An operations base in the town of Magunga, in the eastern foothills and over 5 km from the nearest parts of the forest reserve, is too distant to be a visible and effective enforcement presence.

Conversations with people in communities surrounding the forest suggest that a permanent presence of forest officers based at the forest edge, in combination with regular patrols throughout the forested areas of the reserve, would constitute a significant and immediate deterrent to further deforestation.

Species conservation

The most endangered species occurring in the GHFR is possibly Crowned Eagle, listed by Birdlife International (2014) as globally threatened. Breeding was apparently successful in 2010–2011, suggesting that the extent of forest and prey base may still be suitable for this species. However, based on a failure to record this species during six days in November 2014, it may have been extirpated during the course of this study. Two species are also listed as regionally vulnerable, Least Honeyguide and Grey-winged Robin *Sheppardia polioptera* (Bennun & Njoroge 1999) and they may also be highly threatened here based on only single records of each. A further four forest specialists, Black-fronted Bushshrike, Plain Greenbul *Andropadus curvirostris*, White-browed Crombec and Olive Sunbird *Cyanomitra olivacea* were found at only one or both of the sites supporting undisturbed forest habitat, and must also be considered highly threatened. By contrast, the remaining six forest specialists (Lemon Dove *Aplopelia larvata*, Grey Apalis, Cabanis's Greenbul, Sharpe's Starling, Black-billed Weaver and Slender-billed Greenbul *Andropadus gracilirostris*) were comparatively more abundant or were observed using disturbed habitats. These species could be more adaptable to selectively logged and/or second-growth habitats and corridors, and three species in particular, Lemon Dove, Cabanis's Greenbul and Black-billed Weaver should be somewhat more resilient in the face of forest degradation. They are primarily birds of understorey habitats and are more tolerant of secondary growth.

Species accounts

The accounts below provide additional details of select species recorded in the GHFR as well as elsewhere on Mt Kisingiri as noted. Where relevant, catalogue numbers (or webpage url) are given in brackets after individual species accounts for presentable audio recordings archived at Xeno-canto.org. For a list of all species recorded see Appendix 1. Taxonomy and nomenclature follow the *Checklist of the Birds of Kenya* (EANHS 2009).

Scaly Francolin *Francolinus squamatus*

Two or more birds were heard and recorded calling from the forest edge at Magama in November 2014. It is probably an uncommon and shy resident, which has also been reported from the nearby Lambwe Valley (eBird 1991). [XC205782]

Common Kestrel *Falco tinnunculus*

A single bird seen flying alongside and perching on a high cliff in November 2014 may have been resident in the area.

Eurasian Hobby *Falco subbuteo*

A single adult was observed perched in a dead tree on a ridge at 2100 m in November 2014. On migration, this is a fairly common bird in the adjacent Lambwe Valley (JB pers. obs.), perhaps only occasionally wandering to nearby higher altitudes.

Lanner Falcon *Falco biarmicus*

Two or more pairs are probably resident across the volcano, and were seen around

cliffs and steep terrain above 1800 m in both the Gwasssi and Gembe Hills. Breeding in the latter area was suggested by aggressive mobbing by a pair near a cliff in February 2012. Of note, two distinct colour morphs were observed: two pairs with entirely white underparts, speckled with black, and a pair with entirely cinnamon-rufous underparts marked similarly. [XC101188]

Peregrine Falcon *Falco peregrinus*

An adult soaring southwards over a ridge at 1800 m in January 2011 was large, very white below, and probably of the migrant race *F. p. calidus*. There are comparatively few Peregrine records from the southwest corner of Kenya (Lewis & Pomeroy 1989), which may reflect genuine scarcity or merely low observer coverage.

European Honey Buzzard *Pernis apivorus*

Singles were seen soaring over the Gembe Hills in February 2012 and over Mwing'ore in the Gwasssi Hills in November 2014. It is probably an uncommon winter resident in more wooded areas of the volcano.

Ovambo Sparrowhawk *Accipiter ovampensis*

An adult was photographed perched in the sub-canopy forest at Kumuruga in November 2014. This is a rare accipiter in Kenya with an incompletely known distribution (Lewis & Pomeroy 1989, Zimmerman *et al.* 1996). While it is resident and regularly reported from the western Masai Mara, 120 km to the east, its status on Mt Kisingiri is unclear.

Common Buzzard *Buteo buteo*

Singles were present most days in February and November, and a loose flock of 42 individuals was seen moving south over a high ridge in the Gwasssi Hills on 4 November 2014 over a 20-min period. A smaller southward movement of 10 or more birds was observed over a lower ridge in the Gwasssi Hills at 1500 m on 6 November 2014.

Martial Eagle *Polemaetus bellicosus*

Considered globally vulnerable (Birdlife International 2014), adults were observed soaring over high terrain in both Gwasssi and Gembe Hills on all visits, associating with single immatures in January 2011 and February 2012. The habitat in the Gwasssi Hills is unsuitable for foraging or breeding but there is extensive savanna grassland and suitable prey in the Gembe Hills and adjacent Lambwe Valley and more than one pair is likely resident in the area.

Crowned Eagle *Stephanoaetus coronatus*

Considered globally near-threatened (Birdlife International 2014), a single juvenile was seen soaring low over Rianguge in January 2011, and a pair of adults was observed flying in close formation at Kumuruga in February 2012. Additionally, an adult was observed high over the Gembe Hills in February 2012 flying towards the GHFR. Blue Monkeys *Cercopithecus mitis* are fairly abundant in the higher, forested areas of the GHFR, and probably comprise an important food source for this resident pair.

Lemon Dove *Aplopelia larvata*

In November 2014, a single bird was seen at Magama and a bird heard and recorded at Mwing'ore was thought to be this species. The presence of unseen birds singing an identical song in dense thicket-forest in the Lambwe Valley (also during November

2014) and its apparent absence in the area in January and February, suggests this species may only be a wet season visitor to the GHFR. [XC205756]

Ross's Turaco *Musophaga rossae*

Pairs and small groups were commonly encountered in clusters of remnant trees and forest edge from 1800 to 2200 m.

Common Cuckoo *Cuculus canorus*

A single hatching-year bird was seen and photographed in broken forest and secondary growth at Mwing'ore in November 2014. It is presumably an uncommon winter visitor or passage migrant.

Spotted Eagle Owl *Bubo africanus*

A single bird called intermittently after dark from remnant trees in agricultural land on two nights in November 2014. The bird was not seen but is presumed to be of the nominate subspecies *B. a. africanus*. [XC205763]

Scarce Swift *Schoutedenapus myoptilus*

Two individuals, possibly a male and female pair, were seen closely foraging alongside a partially forested ridge at approximately 2100 m near Magama in February 2012. An additional single bird was seen nearby the same day. Breeding of this species in Kenya is not known with certainty (Lewis & Pomeroy 1989) and its status in the GHFR is unclear.

Horus Swift *Apus horus*

Two birds were seen foraging with Red-rumped Swallows *Cecropis daurica* and Rock Martins *Ptyonoprogne fuligula* above the crater walls in the Gembe Hills in February 2012. It is probably only an irregular visitor to the area from elsewhere.

Narina Trogon *Apaloderma narina*

Reported to be rare in Nyanza Province (Britton 1980), we found it to be fairly common in the remaining canopy forest in the GHFR, where it is probably resident year-round. Birds were much more vocal in January and February than in November.

Cinnamon-chested Bee-eater *Merops oreobates*

A single, vocal bird, was seen foraging from the tops of a tall dead forest tree near Magama in November 2014. It is possibly resident in very small numbers.

Least Honeyguide *Indicator exilis*

A single bird was seen well in remnant forest at Mwing'ore, with the small and squat shape (as in Pallid Honeyguide *I. meliphilus*), as well as dark malar and very dark grey underparts, clearly noted. This species is considered regionally vulnerable by Bennun & Njoroge (1999) and is probably a rare resident here.

Black-fronted Bushshrike *Chlorophoneus nigrifrons*

A single yellow-breasted morph was heard and seen briefly in the sub-canopy forest at Kumuruga in February 2012, foraging with a mixed flock including Sharpe's Starling, Grey Apalis and White-bellied Tit. It is probably rare in the hills and almost certainly threatened by deforestation.

Black Saw-wing *Psolidoprocne pristoptera*

A single bird was seen closely over farmland at 1900 m in January 2011. It is probably only a wanderer to the Gwasssi Hills, with no further observations.

Rock Martin *Ptyonoprogne fuligula*

Singles, pairs and small groups were seen in the Gwasssi and Gembe Hills near suitable cliff habitat on all visits, with a pair perched together on a rock face at 1950 m in November 2014. Its occurrence within the Lake Victoria Basin is otherwise known from a single record only (Britton 1980), though it is likely to be resident across Mt Kisingiri in small numbers.

Trilling Cisticola *Cisticola woosnami*

Fairly common and readily detected by its call from 1300 to 1700 m in both the Gwasssi and Gembe Hills, where it was closely tied to bushed grassland on steep slopes.

Chubb's Cisticola *Cisticola chubbi*

Two unseen pairs were heard counter-duetting in overgrown cultivation adjacent to forest edge at 1950 m in January 2011, and a single was seen well and the alarm call recorded in the same area in November 2014. It is presumably an uncommon resident and greatly outnumbered by Red-faced Cisticola *C. erythrops*. [XC205752]

Rock-loving Cisticola *Cisticola emini*

Although not seen in the field, we found the vocalizations of this species in our automated recordings from the Gembe Hills. The calls were recorded at approximately 1500 m in fairly steep and rocky terrain with a vegetation cover of light grass, some shrubs and trees. Our recordings are identical to calls of this species from the nearby Masai Mara (B. Finch pers. comm.), and we suggest that birds here are also referable to *C. e. emini*. [XC162229]

Wailing Cisticola *Cisticola lais*

A presumed pair was seen in degraded scrub on a steep and dry, rocky slope at 1250 m in the Gembe Hills in January 2011. From a distance, the close similarity to Rattling Cisticola *C. chiniana* was noted, but the voice, consisting of a piercing series of high pitched and descending "tweeeee" notes, was highly distinctive and permitted confident identification as this species. Rattling Cisticolas were common in flatter and more densely bushed acacia terrain at the base of the hills but none was detected on the slopes themselves. West of the Kenyan Rift Valley, this species is known only from the Loita Hills (Britton 1980) and the Karapokot area (Malcolm-Coe 1992), both locations more than 200 km from Mt Kisingiri.

White-chinned Prinia *Schistolais leucopogon*

A group of three or more individuals was heard on two days in November 2014, calling from dense herbage and secondary growth along a stream at Mwing'ore. It is presumably a local and uncommon resident.

Grey Apalis *Apalis cinerea*

A common resident, often with mixed-species flocks and readily detected in all areas from 1850 to 2225 m where forest or clusters of remnant forest trees remain. Birds were observed using all forest strata, to as low as 1 m from ground level, and appeared to tolerate quite a high degree of forest disturbance. [XC107408]

Plain Greenbul *Andropadus curvirostris*

A single bird was seen well and perched in hanging, woody vines in the lower-midstorey forest at Kumuruga in January 2011, with the contrasting grey throat and white eye-lids seen clearly. Its purring call was also heard and recorded in February

2012 at the same location. It was undetected in November 2014 and is undoubtedly seriously threatened by forest loss.

Yellow-whiskered Greenbul *Andropadus latirostris*

An abundant resident throughout forest, forest remnants and well established secondary growth from 1850 to 2225 m. [XC163720, XC205780]

Slender-billed Greenbul *Andropadus gracilirostris*

None was seen but the bulbul-like song of this canopy specialist was heard widely but sparingly on all three visits to the GHFR. The soft and slightly squeaky “ook-ee-woo” call was also heard at Magama in November 2014. It is presumably resident at low densities.

Cabanis’s Greenbul *Phyllastrephus cabanisi*

A common resident in the understorey forest and well established secondary growth from 1850 to 2150 m. Birds were considerably more vocal in January and February than in November. [XC101158, XC156989]

White-browed Crombec *Sylvietta leucophrys*

None was seen but the distinct high-pitched rolling trill of this species was heard at Magama in November 2014. It is probably rare in the hills and possibly restricted to the most intact and locally humid areas of forest.

Arrow-marked Babbler *Turdoides jardineii*

Fairly common in thicker bush and thicket from 1250 to 1500 m on the slopes of both the Gwasssi and Gembe Hills. They appear to separate ecologically from the sympatric Black-lored Babbler *T. sharpeii* by habitat, with the latter found in flat acacia grasslands at the base of the hills and in the Lambwe Valley.

Sharpe’s Starling *Pholia shapii*

Encountered in widespread forest fragments from 1900 to 2200 m on most visits, where it was easily detected by both its calls and song. Birds were also observed foraging in large remnant trees isolated within areas of secondary growth. This species may wander seasonally in response to the wet seasons or the availability of fruiting trees (Lewis & Pomeroy 1989), but it could also be resident here. In either case, it appears to be present in fairly low numbers, with a maximum of six seen together in February 2012. [XC101202, XC131908]

Grey-winged Robin *Sheppardia polioptera*

This regionally vulnerable species (Bennun & Njoroge 1999) is included on the basis of a brief song heard and recorded at Magama in November 2014, and considered diagnostic for this species (JB pers. obs., B. Finch pers. comm.). Given the suitability of the streamside rainforest habitat, and this species’ abundance along forested streams 40 km to the southeast at Rapogi (Lewis & Pomeroy 1989), its presence in the GHFR can be expected.

Red-capped Robin Chat *Cossypha natalensis*

Regularly heard and seen on all visits throughout areas of forest and secondary growth from 1800 to 2200 m, with birds probably resident and referable to *C. n. hylophona*.

Brown-backed Scrub Robin *Cercotrichas hartlaubi*

Only a single bird, which was confirmed by call, in secondary growth and forest edge habitat at 2000 m in November 2014. [XC205935]

Familiar Chat *Cercomela familiaris*

A single bird was seen well, perched on a small boulder amongst short-grassed woodland at 1275 m at the foot of the Gwasssi Hills in November 2014. It is probably resident in small numbers and overlooked in suitable habitat.

Little Rock Thrush *Monticola rufocinereus*

An adult was photographed atop a dilapidated building near the summit of the Gembe Hills in February 2012. It may have been a wandering individual but it seems equally possible that the species may be a resident here, breeding sparingly on buildings and cliffs.

White-eyed Slaty Flycatcher *Melaeornis fischeri*

Small numbers appear to be resident, being regularly encountered in wooded agriculture and forest edge above 1800 m.

Green-headed Sunbird *Cyanomitra verticalis*

A pair was seen several times at Mwing'ore in November 2014, with the male singing aggressively. It is presumably uncommon and possibly local to certain areas within the GHFR.

Olive Sunbird *Cyanomitra olivacea*

A single bird was heard singing briefly at Kumuruga in February 2012 and another can be heard in a recording made at Magama in November 2014. For a highly vocal species, readily found in many western Kenyan forests, our low number of detections suggests it is rare in the GHFR.

Northern Double-collared Sunbird *Cinnyris reichenowi*

Common and probably resident throughout the GHFR in secondary growth and forest edge habitats above 1800 m. Vigorous territorial behaviour and counter-singing was evident in January 2011, with birds less obtrusive at other times. [XC73426, XC205788]

Black-billed Weaver *Ploceus melanogaster*

Singles and pairs were observed sparingly but widely from 1850 to 2050 m, mostly low down in dense secondary growth, but also in the sub-canopy of tall trees at the forest edge. It would appear to be uncommon here, but is probably resident.

Yellow Bishop *Euplectes capensis*

Single males were seen several times in both the Gwasssi and Gembe Hills, in cultivation, moist bush and secondary growth from 1400 to 1950 m. Birds were in bright alternate plumage in January and February, but in drab basic plumage in November. It is probably a resident breeder in small numbers across the volcano.

Yellow-bellied Waxbill *Coccyzygia quartinia*

Singles were seen on three occasions in shrubby secondary growth at 1850 to 1950 m, twice near a stream. Birds reported from the nearby Lambwe Valley (R. Bishop pers. comm.) may well have been wanderers from the GHFR, where it is probably resident in small numbers.

Black-crowned Waxbill *Estrilda nonnula*

A pair flushed from rank cultivation at 1900 m in November 2014. It is probably resident in small numbers and may occur within the forest reserve.

Long-billed Pipit *Anthus similis*

Several birds were seen at 1500 m on rocky slopes in the Gembe Hills in February 2012, and an audio-recording was made. They were noteworthy in having a dark coloration overall, were very boldly marked on the back and breast, and had an atypically slow and disjointed song. It is presumably an overlooked resident in suitable habitat, which should be studied further and sought in the Gwasssi foothills as well. [XC209314]

Western Citril *Crithagra frontalis*

While the taxonomy of the citrils has been a contentious issue, we follow Turner & Pearson (2015) and others here, who tentatively support recognition of central Kenyan *C. citrinelloides kikuyuensis* as specifically distinct from this form. “Black-faced” citrils observed in forest edge and cultivated land above 1600 m on all three visits, were photographed in November 2014 (Fig. 7) and identified as this species. In all respects the males appear the same as African Citril *C. citrinelloides kikuyuensis* apart from a contrasting brighter yellow supercilium, which wraps around the forehead separating the bill from the darker streaked crown on male birds. The population here appears to be resident, and this record has been confirmed as a first documented occurrence of this species in Kenya (D. Turner pers. comm.). The nearest reports to the Gwasssi Hills are from the Kampala area in Uganda (eBird 1991), approximately 180 km to the northwest. However, we suggest that citrils along the Uganda border from the Winam Gulf north to Mt Elgon be closely scrutinized, as this species may also occur locally in that area. [XC246641]

[Some very recent photographs appear to show male citrils with the head plumage pattern of *frontalis* among typical *kikuyuensis* in Nairobi. The former may well have been widely overlooked in central as well as western Kenya, and if the two do indeed co-exist this will have implications for the African citril taxonomic debate. Ed.]



Figure 7. Male Western Citrils *Crithagra frontalis* photographed in the Gwasssi Hills in November 2014, showing the distinctive and contrasting yellow supercilium and forehead.

Cinnamon-breasted Bunting *Emberiza tahapisi*

Three or more males were observed in the Gembe Hills in February 2012, counter-singing from scrubby and rocky slopes at 1400 to 1500 m. It is probably an overlooked resident here in suitable habitat.

Provisional and unconfirmed species

During the course of our surveys, the presence of several additional species was suggested by insufficiently conclusive field observations, or vocalizations recorded by automated units. In the interests of completeness, and to suggest that future observers be alert for the possible presence of these species, we provide details of four such cases below:

Evergreen Forest Warbler *Bradypterus lopezi*

A song heard at Mwing'ore in February 2012, was thought to be of this species, but the bird was not seen and only a poor recording was obtained. The mimicking of this species by Red-capped Robin Chat [XC205760] in the GHFR is also suggestive of its presence.

Yellow Longbill *Macrosphenus flavicans*

A bird heard at Magama and also recorded by an automated unit at Mwing'ore in November 2014, was initially thought to be Olive-green Camaroptera *Camaroptera chloronota*. However, a subsequent reappraisal of the recording suggests the song may be that of Yellow Longbill, being similar to birds in Minziro Forest in northwest Tanzania (D. Moyer pers. comm.). Supporting this identification is a brief observation of a bird fitting the description of this species at Kumuruga in February 2012. With no known records from Kenya, confirming its possible occurrence in the GHFR should be a priority for future observers. [www.xeno-canto.org/205781]

Jameson's Wattle-eye *Dyaphorophya jamesoni*

A song consisting of about ten identical piped notes, heard twice in November 2014, in the forest interior at Magama, was immediately thought to be of this species. A partial recording revealed a note frequency centred at 3.48 kHz, with a duration of 0.21 s, and a delivery rate of 0.78 notes/s; all are appropriate for this wattle-eye. However, wing-clapping was not heard between notes, as is typical for this species, and the brief views revealed only a silhouette of a small stub-tailed bird flitting through the lower midstorey. Given our limited observation, and the possibility that a *Batis* species may be involved (though we encountered none in forest habitat in the GHFR), we leave this record as unconfirmed.

Streaky Seedeater *Crithagra striolata*

None were seen, but calls heard in secondary growth and agriculture from 1850 to 2000 m were thought to be of this species. Although there are reports from the nearby Lambwe Valley (eBird 1991), we treat its occurrence here as unconfirmed pending further observations.

Conclusions

Our surveys confirm the presence of an overlooked highland bird community adjacent to the Kenyan shores of Lake Victoria. In total, we document 46 new or new post-1970 Quarter Square Degree records (Lewis & Pomeroy 1989) from the slopes of Mt Kisingiri; the most notable amongst these is the Western Citril, a new species to Kenya. In addition, we document a distinct and highly threatened assemblage of 34 forest dependent species.

However, our visits were brief, and we were able to spend only a limited time at

either the highest altitudes of the GHFR or in the larger forest fragments. It therefore seems likely that we did not detect all species present and we are confident that further work will reveal numerous additional records. Of particular note was our failure to detect any western forest hornbills, barbets or woodpeckers; the apparent absence of an oriole may simply reflect our limited survey effort.

It is also clear that many of the extant forest specialists in the GHFR are greatly imperilled by deforestation. Present in very low numbers, and possibly forced to utilize suboptimal habitats, extinction of these genetically isolated forms in the near future is a very real possibility. Without an immediate cessation of the rampant tree felling in the GHFR, and a boost to both habitat restoration and management efforts, it seems quite possible that no forest will remain here in as little as 20 years.

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Appendix 1. Species recorded on the Gwasssi and Gembe Hills of Mount Kisingiri in January 2011, February 2012 and November 2014, including altitude, habitat use and Quarter Square Degree atlas squares for new or updated (post-1970) distributions (Lewis & Pomeroy 1986). FF-forest specialist, F-forest generalist, f-forest visitor, nf-non-forest species, GT-Globally Threatened (Birdlife International 2014), VU-Regionally Vulnerable (Bennun & Njoroge 1999), † Afrotropical Highlands Biome (Bennun & Njoroge 1999), * Recorded in the Gwasssi Hills Forest Reserve.

Species	Forest dependence	New QSD	Gwasssi Hills	Gembe Hills	Habitat use
Scaly Francolin <i>Francolinus squamatus</i>	F	60C	2030 m*		forest edge and forest interior
Abdim's Stork <i>Ciconia abdimii</i>	nf		2000 m*		overhead
Hadada Ibis <i>Bostrychia hagedash</i>	nf		1850 m		cultivation and gardens
Common Kestrel <i>Falco tinnunculus</i>	nf		2000 m*		steep terrain and cliffs
Eurasian Hobby <i>Falco subbuteo</i>	nf		2100 m*		forest edge and steep terrain
Lanner Falcon <i>Falco biarmicus</i>	nf	60A, 60C	1900–2000 m*	1800–1880 m	steep terrain and cliffs
Peregrine Falcon <i>Falco peregrinus</i>	nf	60C	1800 m		steep terrain
European Honey Buzzard <i>Pernis apivorus</i>	F		1900 m*	1800 m	forest edge and steep terrain
Black Kite <i>Milvus migrans</i>	nf		1800 m	1800 m	villages, towns and steep terrain
African Harrier Hawk <i>Polyboroides typus</i>	f		1800–2100 m*		cultivation, gardens and forest edge
Ovambo Sparrowhawk <i>Accipiter ovampensis</i>	nf	60C	2080 m*		forest edge and forest interior
Common Buzzard <i>Buteo buteo</i>	nf		1500–2100 m*		forest edge and steep terrain
Augur Buzzard <i>Buteo augur</i>	nf		1600–2100 m*	1300–1800 m	cultivation and forest edge
Wahlberg's Eagle <i>Aquila wahlbergi</i>	nf		2000–2100 m*		forest edge and steep terrain
Martial Eagle <i>Polemaetus bellicosus</i> GT	nf		1900–2100 m*	1500–1800 m	grasslands and steep terrain
Long-crested Eagle <i>Lophaetus occipitalis</i>	f		1800–2150 m*		cultivation, gardens and forest edge
Crowned Eagle <i>Stephanoaetus coronatus</i> GT	FF	60C	2060–2160 m*	1850 m	forest and steep terrain
Speckled Pigeon <i>Columba guinea</i>	nf		1850 m		cultivation and gardens
Lemon Dove <i>Aplopelia larvata</i>	FF	60C	1870–2050 m*		forest interior
Red-eyed Dove <i>Streptopelia semitorquata</i>	f		1250–2100 m*		open woodland, gardens and forest edge
Emerald-spotted Wood Dove <i>Turtur chalcospilos</i>	f	60A		1450–1450 m	acacia woodland and scrub
Blue-spotted Wood Dove <i>Turtur afer</i>	f		1800–1900 m*		gardens, second growth and forest edge
Tambourine Dove <i>Turtur tympanistria</i>	F		1870–2070 m*		forest edge and forest interior
African Green Pigeon <i>Treron calvus</i>	F		1870 m*		forest edge

Species	Forest dependence	New QSD	Gwasssi Hills	Gembe Hills	Habitat use
Ross's Turaco <i>Musophaga rossae</i>	F	60C	1800–2200 m*		wooded cultivation, forest edge and forest interior
Bare-faced Go-away-bird <i>Corythaixoides personatus</i>	nf		1250 m		open woodland and bush
Red-chested Cuckoo <i>Cuculus solitarius</i>	F		2030–2100 m*		forest interior
Common Cuckoo <i>Cuculus canorus</i>	nf	60C	1880 m*		second growth and forest edge
Klaas's Cuckoo <i>Chrysococcyx klaas</i>	f		1870–2100 m*		second growth and forest edge
African Emerald Cuckoo <i>Chrysococcyx cupreus</i>	F		2040–2225 m*		forest edge and forest interior
White-browed Coucal <i>Centropus superciliosus</i>	nf		1800–2100 m*		cultivation, second growth and forest edge
Spotted Eagle Owl <i>Bubo africanus</i>	nf	60C	1800 m		cultivation and gardens
Scarce Swift <i>Schoutedenapus myioptilus</i> †	F	60C	2100–2150 m*		forest edge and steep terrain
Common Swift <i>Apus apus</i>	nf		2100 m*		steep terrain
Little Swift <i>Apus affinis</i>	nf			1850 m	steep terrain
Horus Swift <i>Apus horus</i>	nf	60C		1850 m	steep terrain
White-rumped Swift <i>Apus caffer</i>	nf			1250 m	woodland and hills
Speckled Mousebird <i>Colius striatus</i>	nf		1800–2000 m*	1450 m	bush, cultivation, gardens and second growth
Blue-naped Mousebird <i>Colius macrourus</i>	nf			1200–1350 m	acacia woodland and thicket
Narina Trogon <i>Apaloderma narina</i>	F	60C	2050–2225 m*		forest interior
Little Bee-eater <i>Merops pusillus</i>	nf		1800 m	1450 m	cultivation and bush
Cinnamon-chested Bee-eater <i>Merops oreobates</i> †	F	60C	2100 m*		forest edge and steep terrain
Eurasian Bee-eater <i>Merops apiaster</i>	f		1800 m*		cultivation and forest edge
African Grey Hornbill <i>Tockus nasutus</i>	nf			1200 m	acacia woodland and bush
Yellow-rumped Tinkerbird <i>Pogoniulus bilineatus</i>	F		1800–2225 m*		forest edge and forest interior
Red-fronted Tinkerbird <i>Pogoniulus pusillus</i>	nf		1250 m	1200–1500 m	thicket, bush and open woodland
Spot-flanked Barbet <i>Tricholaema lacrymosa</i>	nf		1250–1850 m	1500 m	open woodland and gardens
White-headed Barbet <i>Lybius leucocephalus</i>	nf		1900 m*	1550 m	gardens, woodlands and forest edge
Double-toothed Barbet <i>Lybius bidentatus</i>	f		1800–1950 m*		gardens, second growth and forest edge
Least Honeyguide <i>Indicator exilis</i> VU	FF	60C	1870 m*		forest edge and forest interior
Lesser Honeyguide <i>Indicator minor</i>	f			1350 m	woodland

Species	Forest dependence	New QSD	Gwasssi Hills	Gembe Hills	Habitat use
Scaly-throated Honeyguide <i>Indicator variegatus</i>	f		2050 m*	1350 m	woodland, forest edge and forest interior
Greater Honeyguide <i>Indicator indicator</i>	f		2070 m*		forest edge
Nubian Woodpecker <i>Campethera nubica</i>	nf			1200–1400 m	acacia woodland and bush
Cardinal Woodpecker <i>Dendropicos fuscescens</i>	f		1800–2150 m*		forest edge and second growth
Chin-spot Batis <i>Batis molitor</i>	nf		1250 m		open woodland
Black-headed Batis <i>Batis minor erlangeri</i>	nf			1400 m	thicket and bush
Brown-throated Wattle-eye <i>Platysteira cyanea</i>	f		1870–2130 m*		forest edge and forest interior
Black-fronted Bushshrike <i>Clorophoneus nigrifrons</i>	FF	60C	2080 m*		forest interior
Sulphur-breasted Bushshrike <i>Chlorophoneus sulfureopectus</i>	f		1250 m		open and bush
Brown-crowned Tchagra <i>Tchagra australis</i>	nf		1700–1950 m*	1400 m	thicket, bush and steep terrain
Black-crowned Tchagra <i>Tchagra senegalus</i>	nf		1800–1950 m		cultivation and bush
Black-backed Puffback <i>Dryoscopus cubla</i>	F		1250–2225 m*		open woodland, forest edge and forest interior
Slate-coloured Boubou <i>Laniarius funebris</i>	nf			1200–1300 m	thicket and scrub
Tropical Boubou <i>Laniarius aethiopicus</i>	f		1800–2225 m*	1450 m	thicket, gardens, forest edge and forest interior
Black-headed Gonolek <i>Laniarius erythrogaster</i>	nf		1250 m		thicket and bush
Black Cuckooshrike <i>Campephaga flava</i>	f		1850–2080 m*		second growth and forest edge
Common Fiscal <i>Lanius collaris</i>	nf		1600–2000 m*	1300–1850 m	bush, cultivation, second growth and forest edge
Common Drongo <i>Dicrurus adsimilis</i>	nf		1250 m		bush and open woodland
African Paradise Flycatcher <i>Terpsiphone viridis</i>	f		1250–2100 m*		open woodland, forest edge and forest interior
Pied Crow <i>Corvus albus</i>	nf		1750 m		towns and villages
White-bellied Tit <i>Parus albiventris</i>	f		1250–2225 m*		open woodland, forest edge and forest interior
White-headed Saw-wing <i>Psadilopecne albiceps</i>	f		1800–2150 m*		cultivation, forest edge and steep terrain
Black Saw-wing <i>Psalidoprocne pristoptera</i>	f	60C	1900 m		cultivation and forest edge
Barn Swallow <i>Hirundo rustica</i>	nf		1800–1900 m		cultiivation and open terrain
Rock Martin <i>Ptyonoprocne fuligula</i>	nf	60A, 60C	1400–2100 m*		rockfaces, cliffs and steep terrain
Common House Martin <i>Delichon urbicum</i>	nf	60C	1900 m*		cultivation, forest edge and steep terrain
Red-rumped Swallow <i>Cecropis daurica</i>	nf		1800–1900 m*		cultivation, forest edge and steep terrain

Species	Forest dependence	New QSD	Gwasssi Hills	Gembe Hills	Habitat use
Flappet Lark <i>Mirafrja rufocinnamomea</i>	nf			1750 m	grassland
Red-faced Cisticola <i>Cisticola erythrops</i>	nf		1800–2150 m*		cultivation, thicket and second growth
Trilling Cisticola <i>Cisticola woosnami</i>	nf		1300–1700 m	1300–1600 m	bush, scrub and grassland on steep terrain
Chubb's Cisticola <i>Cisticola chubbi</i> †	F	60C	1950 m*		cultivation and second growth
Rock-loving Cisticola <i>Cisticola emini emini</i>	nf	60A		1500 m	scrub and grassland on rocky slopes
Rattling Cisticola <i>Cisticola chiniana</i>	nf			1200 m	acacia woodland and bush
Wailing Cisticola <i>Cisticola lais</i>	nf	60A		1250 m	scrub on rocky slopes
Croaking Cisticola <i>Cisticola natalensis</i>	nf			1750 m	grassland on slopes
Siffling Cisticola <i>Cisticola brachypterus</i>	nf	60C	1250 m		open woodland on slopes
Tawny-flanked Prinia <i>Prinia subflava</i>	nf		1800–1950 m		bush, cultivation and gardens
White-chinned Prinia <i>Schistolais leucopogon</i>	F		1880 m*		streamside second growth and forest edge
Grey Apalis <i>Apalis cinerea</i>	FF	60C	1870–2225 m*		forest edge and forest interior
Grey-capped Warbler <i>Eminia lepida</i>	f		1800–2150 m*		cultivation, gardens, second growth and forest edge
Grey-backed Camaroptera <i>Camaroptera brachyura</i>	f		1250–2225 m*		thicket, second growth and forest edge
White-browed Crombec <i>Sylvietta leucophrys</i> †	FF	60C	2050 m*		forest interior
Common Bulbul <i>Pycnonotus barbatus</i>	f		1250–2225 m*	1300 m	gardens, second growth and forest edge
Plain Greenbul <i>Andropadus curvirostris</i>	FF	60C	2080 m*		forest interior
Yellow-whiskered Greenbul <i>Andropadus latirostris</i>	F	60C	1870–2225 m*		forest edge and forest interior
Slender-billed Greenbul <i>Andropadus gracilirostris</i>	FF	60C	1850–2110 m*		forest edge and forest interior
Cabanis's Greenbul <i>Phyllastrephus cabanisi</i>	FF		1870–2150 m*		second growth, forest edge and forest interior
Moustached Grass Warbler <i>Melocichla mentalis</i>	nf		1700–1950 m*	1350 m	cultivation, thicket and second growth
Willow Warbler <i>Phylloscopus trochilus</i>	f		1950–2225 m*		forest edge
Red-faced Crombec <i>Sylvietta whytii</i>	nf		1250 m		open woodland and bush
Blackcap <i>Sylvia atricapilla</i>	F		1870–2225 m*		second growth and forest edge
Garden Warbler <i>Sylvia borin</i>	f		1800–2100 m*		gardens and forest edge
Arrow-marked Babbler <i>Turdoides jardineii</i>	nf	60A, 60C	1600 m	1250–1500 m	bush, thicket and gardens
African Yellow White-eye <i>Zosterops senegalensis</i>	f		1800–2225 m*		gardens, forest edge and forest interior

Species	Forest dependence	New QSD	Gwasssi Hills	Gembe Hills	Habitat use
Sharpe's Starling <i>Pholia sharpii</i> †	FF	60C	1900–2200 m*		forest edge and forest interior
Red-billed Oxpecker <i>Buphagus erythrorhynchus</i>	nf			1300 m	scrub and bush near habitation
African Thrush <i>Turdus pelios</i>	f		1850 m		cultivation and gardens
Grey-winged Robin <i>Sheppardia polioptera</i> VU	FF		2030 m*		forest edge and forest interior
White-browed Robin Chat <i>Cossypha heuglini</i>	nf		1800–2050 m*		cultivation, gardens and forest edge
Red-capped Robin Chat <i>Cossypha natalensis</i>	F		1870–2140 m*		second growth, forest edge and forest interior
Brown-backed Scrub Robin <i>Cercotrichas hartlaubi</i>	f	60C	2100 m*		second growth
White-browed Scrub Robin <i>Cercotrichas leucophrys</i>	nf		1250 m	1200–1400 m	open woodland, scrub and bush
Whinchat <i>Saxicola rubetra</i>	nf		1850 m		cultivation
Northern Wheatear <i>Oenanthe oenanthe</i>	nf			1850 m	grassland and rocky slopes
Familiar Chat <i>Cercomela familiaris</i>	nf		1275 m		open woodland, grassland and rocky slopes
Little Rock Thrush <i>Monticola rufocinereus</i> †	nf	60A, 60C		1850 m	buildings
White-eyed Slaty Flycatcher <i>Melaenornis fischeri</i> †	F		1800–2225 m*		gardens and forest edge
Spotted Flycatcher <i>Muscicapa striata</i>	nf		1850 m		cultivation and gardens
Collared Sunbird <i>Hedydipna collaris</i>	F		1870–2110 m*		second growth and forest edge
Green-headed Sunbird <i>Cyanomitra verticalis</i>	F		1870 m*		forest edge and forest interior
Olive Sunbird <i>Cyanomitra olivacea</i>	FF	60C	2050–2110 m*		forest interior
Amethyst Sunbird <i>Chalcomitra amethystina</i>	f	60C	1800–2000 m*		cultivation, gardens, second growth and forest edge
Scarlet-chested Sunbird <i>Chalcomitra senegalensis</i>	nf		1800–2100 m*		cultivation, gardens and forest edge
Bronze Sunbird <i>Nectarinia kilimensis</i> †	f		1250–2100 m*		bush, cultivation, gardens and second growth
Northern Double-collared Sunbird <i>Cinnyris reichenowi</i> †	F	60C	1800–2225m*		second growth, forest edge and forest interior
Beautiful Sunbird <i>Cinnyris pulchellus</i>	nf			1300–1450 m	bush and thicket
Marico Sunbird <i>Cinnyris mariquensis</i>	nf		1250 m		open woodland and bush
Red-chested Sunbird <i>Cinnyris erythrocerus</i>	nf			1300 m	bush and thicket
Variable Sunbird <i>Cinnyris venustus</i>	f		1800–1900 m*		cultivation and forest edge
Copper Sunbird <i>Cinnyris cupreus</i>	f		1850 m		cultivation and gardens
White-browed Sparrow Weaver <i>Plocepasser mahali</i>	nf			1200 m	acacia woodland and bush

Species	Forest dependence	New QSD	Gwasssi Hills	Gembe Hills	Habitat use
Grey-headed Sparrow <i>Passer griseus</i>	nf		1250–1850 m		cultivation and gardens
Yellow-spotted Petronia <i>Petronia pyrgita</i>	nf		1250 m		open woodland and bush
Grosbeak Weaver <i>Ambylospiza albifrons</i>	f		1900–2000 m*		second growth
Baglafaecht Weaver <i>Ploceus baglafaecht reichenowi</i> †	f		1800–2100 m*	1350–1500 m	scrub, cultivation, second growth and forest edge
Spectacled Weaver <i>Ploceus ocularis</i>	f		1800–2000 m*		cultivation, thicket and second growth
Black-billed Weaver <i>Ploceus melanogaster</i> †	FF	60C	1870–2100 m*		second growth and forest edge
Lesser Masked Weaver <i>Ploceus intermedius</i>	nf		1800 m*		scrub and thicket
Village Weaver <i>Ploceus cucullatus</i>	nf		1800–1900 m		cultivation and gardens
Golden-backed Weaver <i>Ploceus jacksoni</i>	nf		1250 m		open woodland and bush
Black-winged Red Bishop <i>Euplectes hordeaceus</i>	nf		1850 m		cultivation
Yellow Bishop <i>Euplectes capensis</i>	nf	60A, 60C	1600–1950 m*	1400 m	bush, cultivation and second growth
Yellow-bellied Waxbill <i>Coccopygia quartinia</i>	f		1870–2000 m*		second growth and forest edge
Common Waxbill <i>Estrilda astrid</i>	nf		2050 m*		second growth
Black-crowned Waxbill <i>Estrilda nonnula</i>	f	60C	1900 m		cultivation and forest edge
Red-cheeked Cordon-bleu <i>Uraeginthus bengalus</i>	nf		1250 m		open woodland and bush
Purple Grenadier <i>Granatina ianthinogaster</i>	nf			1250–1400 m	scrub and thicket
Bronze Mannikin <i>Spermestes cucullatus</i>	nf		1250–1900 m		bush, cultivation and second growth
Pin-tailed Whydah <i>Vidua macroura</i>	nf		1250 m		open woodland and bush
African Pied Wagtail <i>Motacilla aguimp</i>	nf		1850 m		cultivation and gardens
Long-billed Pipit <i>Anthus similis</i>	nf	60A		1500 m	scrub, grassland and rocky slopes
Plain-backed Pipit <i>Anthus leucophrys</i>	nf		1250 m		bush and grassy slopes
Tree Pipit <i>Anthus trivialis</i>	f		1250–2060 m*		open woodland, second growth and forest edge
Western Citril <i>Crithagra frontalis</i>	f	60C	1600–2080 m*		cultivation, gardens, second growth and forest edge
Yellow-fronted Canary <i>Crithagra mozambica</i>	nf		1250 m		bush and open woodland
White-bellied Canary <i>Crithagra dorsostriata</i>	nf			1200 m	scrub and acacia woodland
Brimstone Canary <i>Crithagra sulphurata</i>	nf		1850 m		cultivation and gardens
Cinnamon-breasted Bunting <i>Emberiza tahapisi</i>	nf	60A		1400–1500 m	scrub and rocky slopes

Preliminary observations of birds of Songo Songo Island, Tanzania

Chacha Werema and Cuthbert L. Nahonyo

Introduction

While the bird fauna of many East African islands is relatively well known (e.g., Wasini: Ryall 1994; Zanzibar: Moreau & Pakenham 1941, Pakenham 1979; Pemba: Moreau & Pakenham 1941, Pakenham 1979, Archer & Turner 1993, Catry *et al.* 2000; Latham: Gwynne *et al.* 1970, Gerhart & Turner 1978; Mafia: Moreau & Pakenham 1941, Moreau 1944, Mlingwa & Msuya 1992, 1994), ornithologists have paid little attention to Songo Songo Island, Tanzania. Herein, we provide a preliminary checklist of its avifauna, aspects of relative abundance of each species, and information on some breeding species. This paper provides baseline data for the conservation of birds on the island and we invite comparisons by other ornithologists now and in the future. This is particularly important because the island is small and already heavily populated (Darwall *et al.* 1997, URT 2013). It is possible that in the future, habitats such as coral rag thickets may be cleared for human habitation and cultivation as has happened on Mafia Island (Greenway *et al.* 1988).

Materials and methods

Study area

Songo Songo Island is the largest island of the Songo Songo Archipelago (Darwall 1996, Darwall *et al.* 1997), and lies approximately 20 km off the east coast of Tanzania (8°31.5'S, 39°30.5'E; Fig. 1), separated from the mainland by water not more than 30 m deep (Moreau & Pakenham 1941). The island rises some 10 m above sea level and is c. 1.8 km across at its widest point and 4.5 km long (Darwall *et al.* 1997). It is formed from coral limestone bed-rock that is overlaid with a sandy substratum in some parts (Darwall *et al.* 1997).

To our knowledge, a detailed description of the vegetation of Songo Songo has not yet been published (but see Nahonyo *et al.* 2008). We made observations in several distinct habitats: (1) coral rag thicket and bushland on the western, northern and southwestern sides of the island; (2) coconut palm, composed mainly of coconut and some scattered trees on the eastern side of the island; (3) a small grassland area at the airstrip; (4) shrubland on the southern side of the island; and, (5) a littoral zone of tidal flats that surrounds the entire island.

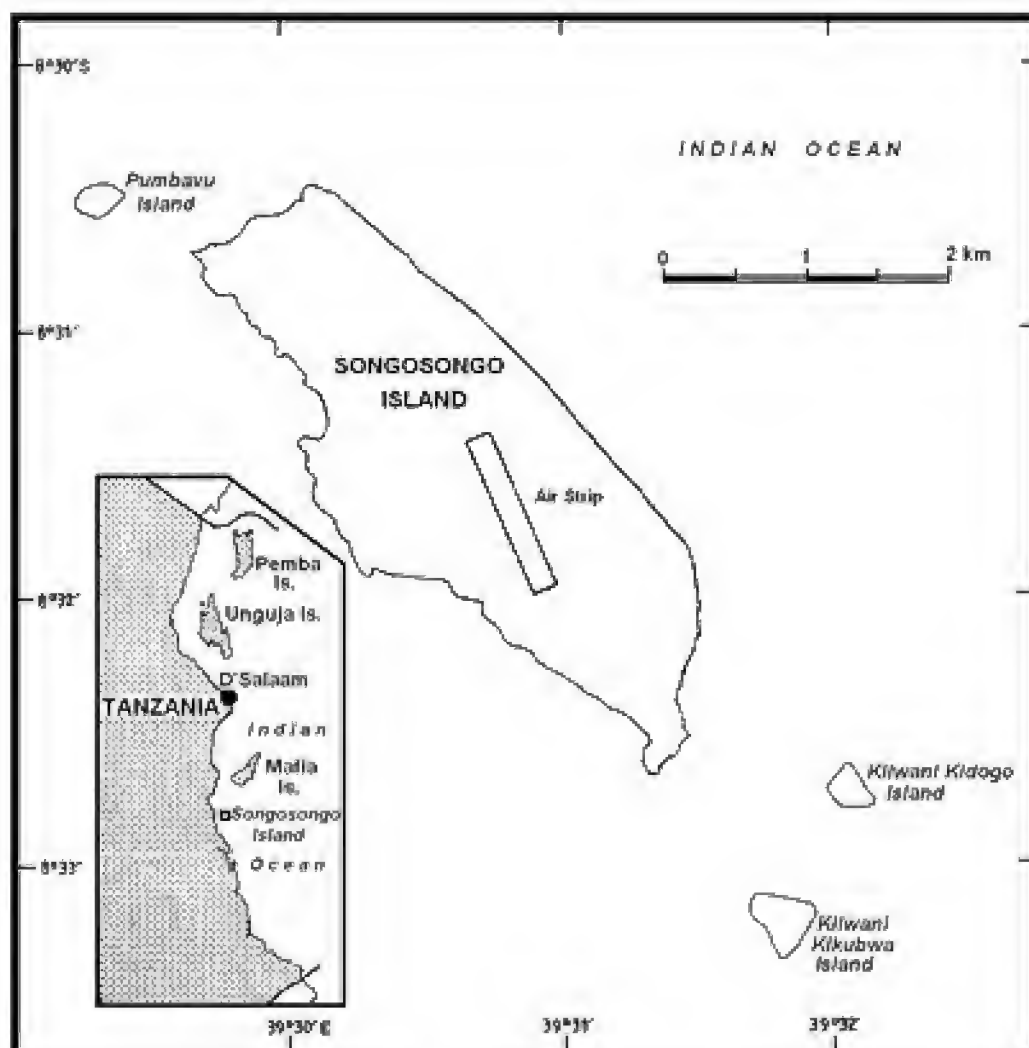


Figure 1. The location of Songo Songo Island along the coast of Tanzania.

Methods

Data were collected over 12 days during December 2007. We used mist nets (two 12-m and three 9-m, each 2.5 m high, mesh size 30 mm, four shelves) in thickets on the coral rag plus audio-visual observations (AVOs) of birds over the entire island, making sure that all the major habitat types present were covered. Because Pumbavu and Songo Songo islands are connected by a sand-bar that is usually exposed at low tides, birds were surveyed as far as Pumbavu, which is located *c.* 750 m northwest of Songo Songo (see Fig. 1). Also, during low tide, we surveyed Kilwani Kikubwa Island, *c.* 1.5 km south-southeast of Songo Songo Island (see Fig. 1). Notes of breeding birds were based on the presence of active nests, birds seen in breeding plumage, or parents attending young.

In order to assess the relative abundance of birds, we developed a simple index based on our observations as follows: a = very common, observed daily and usually >50 individuals; b = less common, frequently observed, but not daily, 11–50 individuals; c = scarce, occasional, 3–10 individuals; and d = rare, seen/heard only once, only 1–2 individuals. Common and scientific names follow Britton (1980). However, Burchell's Coucal *Centropus burchelli* was considered a full species rather than a distinctive race of White-browed Coucal *C. superciliosus*.

Results

Thirty-five species in 19 families were recorded (Table 1). Approximately 42% of these were Palearctic migrants and three species — Madagascar Bee-eater *Merops superciliosus*, Didrik Cuckoo *Chrysococcyx caprius* and Paradise Flycatcher *Terpsiphone viridis* — were intra-African migrants (Table 1).

Of the species observed, Little Egret *Egretta garzetta* and Cattle Egret *Bubulcus ibis* were found on active nests on a baobab tree *Adansonia digitata*. Black-headed Weavers *Ploceus cucullatus* were nesting in coconut palms. Other breeding birds were Red-eyed Dove *Streptopelia semitorquata* (one active nest was seen) and Amethyst Sunbird *Nectarinia amethystina*, where a female was seen feeding chicks in a nest in the thicket habitat.

Table 1. Bird species recorded on Songo Songo Island. Also included are methods of detection and habitat type. Obs = species observed. MN = mist netting, number of individuals caught in parentheses where applicable. Palms are coconut palms. PM = Palearctic migrant, IM = intra-African migrant, R = resident. The letters a–d indicate indices of relative abundance where a = very common, daily observed, > 50 individuals; b = less common, frequently observed but not daily, 11–50 individuals; c = scarce, occasional, 3–10 individuals; and d = rare, seen/heard only once, only 1–2 individuals.

Species	Detection method	Habitat type	Migratory status	Relative abundance
Grey Heron <i>Ardea cinerea</i>	Obs	Littoral	R	b
Purple Heron <i>Ardea purpurea</i>	Obs	Littoral	R	b
Cattle Egret <i>Bubulcus ibis</i>	Obs	Thickets, palms	R	b
Little Egret <i>Egretta garzetta</i> *	Obs	Littoral, thickets	R	a
Oystercatcher <i>Haematopus ostralegus</i>	Obs	Littoral	PM	c
Ringed Plover <i>Charadrius hiaticula</i>	Obs	Littoral	PM	a
Greater Sandplover <i>Charadrius leschenaultii</i>	Obs	Littoral	PM	a
Mongolian Sandplover <i>Charadrius mongolus</i>	Obs	Littoral	PM	a
Common Sandpiper <i>Actitis hypoleucos</i>	Obs	Littoral	PM	a
Whimbrel <i>Numenius phaeopus</i>	Obs	Littoral	PM	a
Greenshank <i>Tringa nebularia</i>	Obs	Littoral	PM	a
Terek Sandpiper <i>Xenus cinereus</i>	Obs	Littoral	PM	a
Curlew Sandpiper <i>Calidris ferruginea</i>	Obs	Littoral	PM	a
Little Stint <i>Calidris minuta</i>	Obs	Littoral	PM	a
Turnstone <i>Arenaria interpres</i>	Obs	Littoral	PM	a
Water Thicknee <i>Burhinus vermiculatus</i>	Obs	Thickets	R	c
Sooty Gull <i>Larus hemprichii</i>	Obs	Littoral	PM	c
Common Tern <i>Sterna hirundo</i>	Obs	Littoral	PM	b
Saunders's Tern <i>Sterna albifrons saundersi</i>	Obs	Littoral	IM	c
Red-eyed Dove <i>Streptopelia semitorquata</i>	Obs, MN(1)	Thickets, palms	R	a
Laughing Dove <i>Streptopelia senegalensis</i>	Obs	Thickets, palms	R	a
Didric Cuckoo <i>Chrysococcyx caprius</i>	Obs, MN(6)	Thickets	IM	b
Burchell's Coucal <i>Centropus burchelli</i>	Obs	Thickets	R	c
Palm Swift <i>Cypsiurus parvus</i>	Obs	Thickets	R	a
Red-faced Mousebird <i>Urocolius indicus</i>	Obs, MN(1)	Thickets	R	a
Madagascar Bee-eater <i>Merops superciliosus</i>	Obs	Thickets	IM	b
Golden Oriole <i>Oriolus oriolus</i>	Obs	Thickets	PM	d
Pied Crow <i>Corvus albus</i>	Obs	Coconut palms	R	a
African Reed Warbler <i>Acrocephalus baeticatus</i>	Obs, MN(6)	Thickets	R	b
Spotted Flycatcher <i>Muscicapa striata</i>	Obs	Thickets	PM	b
Paradise Flycatcher <i>Terpsiphone viridis</i>	Obs, MN(13)	Thickets	IM	a
Richard's Pipit <i>Anthus novaeseelandiae</i>	Obs	Grassland	R	c
Amethyst Sunbird <i>Nectarinia amethystina</i>	Obs, MN(1)	Thickets	R	b
Black-headed Weaver <i>Ploceus cucullatus</i>	Obs, MN(1)	Thickets, palms	R	a
Common Waxbill <i>Estrilda astrild</i>	Obs	Thickets, palms	R	d

*both white and dark morphs

Discussion

With only 35 species, Songo Songo Island seems to have an impoverished avifauna compared to Zanzibar (Moreau & Pakenham 1941, Pakenham 1979), Pemba (Moreau & Pakenham 1941, Pakenham 1979, Archer & Turner 1993, Catry *et al.* 2000) and Mafia (Moreau & Pakenham 1941, Moreau 1944, Mlingwa & Msuya 1992, 1994) islands. The island lacks several families and species found on Zanzibar, Pemba and Mafia islands and along the coastal areas of mainland Tanzania. Because large islands tend to have more bird species (Lack 1969), the low species richness found on the island is likely to be due to its small area.

None of the species we detected on Songo Songo Island is endemic, and all are a subset of those found on mainland Tanzania. Songo Songo is about 20 km from the mainland, the presumed source habitat. The presence of continental species on Songo Songo concurs with the findings of Adler (1994), who reported that proximity of an island to the mainland promotes the diversity of continental species. Elsewhere along the East African coast, similar observations have been made by Ryall (1994), who detected 123 species of birds, all “continental species” on Wasini Island, Kenya, located 1.5 km from the mainland and slightly smaller than Songo Songo Island.

Our study has provided a preliminary checklist of the terrestrial and aquatic avifauna present on Songo Songo. Although the island does not contain any endemic or globally threatened bird species, the presence of both migratory and breeding species signifies its importance and suggests that there is a need for protecting its habitats, particularly the coral rag thickets.

We recommend further ornithological surveys to help predict whether species relaxation and extinction are occurring. An increase in the human population on the island (URT 2013) is likely to have negative impacts on the avifauna and of particular interest would be the effect of the ongoing natural gas exploration.

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Short Communications

Two recent records of Cassin's Hawk Eagle *Spizaetus africanus* from Imenti Forest, Kenya

Cassin's Hawk Eagle *Spizaetus africanus* is a little-known forest-dependent species that occurs mainly in West and Central Africa (Brown *et al.* 1982). The species was considered a Guineo-Congolian near endemic whose eastern-most distribution was the forests of western Uganda, but some recent reports suggest that it was once more widespread in the highland forests of East Africa (Clark & Edelstam 2001, Jones 2007). The discovery of an adult Cassin's Hawk Eagle in Ndundulu Forest of the Udzungwa Mountains, southern Tanzania, represents the eastern-most confirmed record of this species (Jones 2007). This, along with other observations in the Udzungwa Mountains of species of flora and fauna with Guineo-Congolian affinities, indicates an historical link between the Afromontane forests of southern Tanzania and the lowland Guineo-Congolian forests (Jones 2007). The first record of Cassin's Hawk Eagle in Kenya, a bird collected in the highland forests of Mt Elgon (Clark & Edelstam 2001), suggests a wider link that includes the Afromontane forests of Kenya. Evidence of this historical link was recently substantiated through two further confirmed records from central Kenya. In May 2006 and February 2013, one adult and one juvenile Cassin's Hawk Eagle respectively were photographed in Imenti Forest (0°05'N, 37°37'E; 1400–2200 m) on the northern flank of Mt Kenya, approximately 3 km west of Meru Town. ST, and later Bill Clark, positively identified both records from these photographs. Rob Davies further confirmed the identity of the 2013 bird as a Cassin's Hawk Eagle. Both records were subsequently accepted by the East African Rarities Committee (N. Hunter, pers. comm.).

The first observation was on 16 May 2006 during a tour led by BF. A large black-and-white raptor flew low across a clearing and disappeared into the forest. Some



Figure 1. Adult Cassin's Hawk Eagle in forest clearing, Imenti Forest, Kenya, 16 May 2006 (photo B. Finch).

minutes later it was relocated perched at the edge of an area cleared by illegal charcoal producers. The bird was initially distinguished by its size and shape, which resembled that of an African Hawk Eagle *Aquila spilogaster* (Fig. 1). But with the exception of Ayres's Hawk Eagle *A. ayresii*, it differed markedly in proportion from other black-and-white forest raptors. It was bulky, with a medium length tail and thick legged, which ruled out Great Sparrowhawk *Accipiter melanoleucus* and Augur Buzzard *Buteo augur*. The underparts from the throat to the legs were white, and the leg feathers were covered with small black spots, which helped to further eliminate the above two species. The bird had black flanks, which is inconsistent with most Ayres's Hawk Eagles, which show irregular black blotches. The tail was of medium length, but was only seen from below. The terminal band was broad, but the remaining few complete tail bands were very narrow.

On 28 February 2013, a raptor was spotted by PW perched at the top of a tall tree adjacent to the Nanyuki-Meru Highway. The bird was large, with heavy vertical streaking on its breast, enormous talons and feathered legs (Fig. 2). Its head was



Figure 2. Four photographs of the same individual juvenile Cassin's Hawk Eagle in the tree canopy along a busy roadside, Imenti Forest, Kenya, 28 February 2013 (photos S. Kapila). 2a. Front view showing dark eye colour, dark streaking on the throat and chest. 2b. Front view showing very thick tarsus, spotting on legs, and size of talons. 2c. Lateral view showing the buffy white-tipped upperwings and secondaries, and the grey-brown tail tipped with white. 2d. View of white undertail coverts with brown spotting, large feet and talons, and medium length tail.

brown with a large bill and no obvious crest. It was later identified from photographs as a juvenile Cassin's Hawk Eagle, based on the laterally compressed bill, large feet and eye, short and massively thick tarsus, and wing to tail length ratio.

The only previous record of a Cassin's Hawk Eagle in Kenya came from a museum specimen collected in 1926 by the Dr H. Granvik Expedition (Clark & Edelstam 2001). The specimen was lying in the Malmö Naturmuseum in Sweden, and was originally incorrectly identified as a Booted Eagle *Hieraaetus pennata*, but later identified as a juvenile Cassin's Hawk Eagle that had originated from the forests of Mt Elgon on the western border of Kenya (Clark & Edelstam 2001). The extraordinary gap of 80 years between this record and the present sightings is presumably indicative of the difficulty in observing

this species in its dense forest habitat, and also of the limited ornithological surveys that have been conducted in Kenyan forests.

Acknowledgements

We thank Bill Clark and Rob Davies for confirming the identity of this species. The 2013 observation was made during annual raptor surveys supported by The Peregrine Fund.

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Range extension of the White-headed Buffalo Weaver *Dinemellia dinemelli* in central Afar, Ethiopia

The White-headed Buffalo Weaver is known from South Sudan, Ethiopia, Somalia, Uganda, Kenya, Tanzania, and the Democratic Republic of Congo (Dickinson & Christidis 2014), but there are few published accounts of its natural history. It is a common bird of dry bush and savanna in the Horn of Africa, found in the Rift Valley and east to the Arabian Sea (Ash & Atkins 2009, Redman *et al.* 2009). I encountered the species at a field camp along the Mille River in the central Afar, Ethiopia (11°50'N, 40°49'E; elevation 625 m) at a site dominated by dry bush habitats, and fairly heavily grazed by livestock. Five birds, all in adult plumage, were seen well and photographed at 16:00 on 20 January 2015. They were feeding on the ground and perching briefly; no breeding-related behaviours were noted, and the birds were silent.

The species is divided into two subspecies, *boehmi* in Tanzania and southern Kenya and the nominate form further north. The nominate subspecies is characterized by browner (rather than deep black) tones in the mantle feathers and more substantial white margins to the scapulars, tertials and greater coverts (del Hoyo *et al.* 2010). Based on the back colour and white edging (Fig. 1), the Afar individuals are assigned to the nominate subspecies, as would be expected geographically.



Figure 1. One of five White-headed Buffalo Weavers observed in the central Afar, Ethiopia on 20 January 2015 (photo A. W. Jones).

White-headed Buffalo Weaver is thought to be a resident species, but it may move seasonally on a local scale (del Hoyo *et al.* 2010). It is known from southern Ethiopia, and is routinely recorded from sites in the Rift Valley north through Awash National Park and Aledoghi Wildlife Reserve (eBird 2015). The present record lies well north of the mapped range in other published works (Fry & Keith 2004, Ash & Atkins 2009, Redmond *et al.* 2009, del Hoyo *et al.* 2010), and is over 200 km north of all correctly placed eBird reports. It may represent local movement outside of the breeding

season, but considering the dearth of observers in this region it probably represents a new northernmost population of White-headed Buffalo Weaver.

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Long-tailed Skua *Stercorarius longicaudus*: first record for Uganda

The Long-tailed Skua *Stercorarius longicaudus*, like its congeners, is a highly pelagic species, breeding on tundra around the Arctic Circle and wintering mainly in the subantarctic waters of the Southern Hemisphere (Furness 1996). It is an extremely rare vagrant to the coasts and inland lakes of eastern Africa with only four confirmed reports (from Kenya and Tanzania) since 1961 (D. Turner, pers. comm.).

During the afternoon of 5 December 2014 we were bird watching at Lake Munyanyange, a large low-lying lake in open countryside near the village of Katwe, bordering the Queen Elizabeth National Park in western Uganda (0°08'S, 29°53'E). We were accompanied by Kasasa Hannington and a local guide and ornithologist, Ouma Richardson. At one point PH noticed a bird flying close to the lakeshore which he thought was a skua, although nothing more came of it since the bird quickly disappeared from view.

Fortunately, several minutes later, he noticed the bird again as it flew in isolation, high and distantly over the lake, moving apparently in the wake of a large group of departing Lesser Black-backed Gulls *Larus fuscus*. He shouted to DT who managed to locate the bird in his camera and take several photographs. Although rather far away the bird could be clearly picked out as it moved slowly southwards, making large sweeping circular glides in the manner of a migrating raptor. It appeared to be the same size or smaller than the departing gulls and the overall impression was that it

was (for a skua) rather light and slender, lacking any notable heaviness or bulk. The head in particular seemed rather small. The bird was in view for some 90 s before it was lost in the distance. After it had disappeared the feeling was that it had been 'either an Arctic [*S. parasiticus*] or a Long-tailed'. However, neither of us was very experienced in seabird watching, so no firm conclusions on the bird's identity could be drawn.

About a week later we returned to our respective countries and sought the opinions of friends who had more experience of seabirds and a better knowledge of skua identification. Because of the bird's overall size and jizz, in particular its wing shape (with narrow arms similar in depth to the hand), identification was concentrated on Arctic vs Long-tailed Skua (Pomarine *S. pomarinus* was eliminated). Based on the photographic evidence our 'third parties' concluded (independently) that the bird was a Long-tailed Skua (Fig. 1). The barred axillaries and short blunt (juvenile) projections to the central tail feathers indicated that it was a bird in its first winter.



Figure 1. Photographs of Long-tailed Skua in Uganda showing the light build, narrow wings and slim bill. (L-R) Upperwing, short rounded tail projections, jizz, and underwing barring (photos D. Thorns).

Arctic Skua was eliminated by the following suite of characters:

- the narrow 'arms', similar in 'depth' to the 'hand' (the arm appears broader in Arctic)
- the white primary shafts, present only on P10 and P9
- the broad blunt projections to the central tail feathers
- the overall small appearance with a small head
- the suggestion of heavily barred undertail coverts
- the white belly — typical for juvenile Long-tailed, but extremely unusual for juvenile Arctic.

The observation was submitted to the East African Rarities Committee who have accepted it as the first documented record for Uganda.

Acknowledgements

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A second Uganda record of Red-footed Falcon *Falco vespertinus*

On Sunday 5 October 2014, a crystal clear morning with the Rwenzori chain clear of cloud cover, I drove north from Fort Portal with my wife Jean to Lake Saka and we walked on from there to the grassy escarpment overlooking the Lake Albert rift valley. From here we witnessed a memorable passage of raptors. First to appear were three Steppe Buzzards *Buteo buteo vulpinus* travelling south overhead. Then, as the morning progressed, more birds began to arrive, with “kettles” of Steppe Buzzards and Lesser Spotted Eagles *Aquila pomarina* appearing overhead as they climbed up the rift. At about 10:00 we were watching a circling European Honey Buzzard *Pernis apivorus* when a small falcon appeared with it, initially no more than about 25 m above us. It was pale grey above, slightly darker on the head, tail and wing coverts, and pale grey below with an obvious orange/red vent area, the under-wing coverts and tail being slightly darker. We watched it through binoculars for a couple of minutes, soaring with the Honey Buzzard, before both birds gained height and drifted south. Although its soft part colours could not be seen, the falcon could only have been a male Red-footed Falcon *Falco vespertinus*, a bird I am familiar with from Europe and from spring passage in Cameroon. That morning, in addition to the falcon, we finally counted the following migrant raptors: 45 Steppe Buzzards, 9 Lesser Spotted Eagles, 4 European Honey Buzzards, 5 Black Kites *Milvus migrans* and a Booted Eagle *Aquila pennata*.

The Red-footed Falcon has been accepted by the EARC as the second confirmed record for Uganda, the first being a bird at Murchison Falls National Park on 4 October 2000 (Skeen 2014). The only two documented autumn records from Kenya were also from mid October (Lewis & Pomeroy 1989). Red-footed Falcons from eastern Europe and Asia cross the eastern Mediterranean but most would appear to pass west of our region en route to wintering grounds in southwest Africa (Ferguson-Lees & Christie 2001).

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True bats (Microchiroptera) in the diet of Verreaux's Eagle Owl *Bubo lacteus*

Verreaux's Eagle Owl *Bubo lacteus* is a large owl widespread in eastern and southern Africa and southern Central Africa, with a discontinuous distribution in West Africa (Marks *et al.* 1999, König & Weick 2008). It inhabits a wide variety of habitats such as woodlands, riparian forests, savannas, semi-deserts, deserts and even tropical rainforests in West and Central Africa (König & Weick 2008). It is an opportunistic predator; its diet has been recorded as comprising mainly mammals, such as rodents, insectivores, primates and fruit bats, plus small to large birds including passerines, ducks, herons, raptors and even smaller owls, such as Barn Owl *Tyto alba* and Spotted Eagle Owl *B. africanus* (Brown 1965, Avery *et al.* 1985, Marks *et al.* 1999, König & Weick 2008). In addition, it also takes reptiles, amphibians, fish, insects, spiders and scorpions and it has also been recorded feeding on carrion (Brown 1965, Marks *et al.* 1999, König & Weick 2008, Chittenden 2014). It is a crepuscular and nocturnal hunter and hunting near artificial lights has also been recorded (Brown 1965, Chittenden 2014).

On 3 February 2015 we observed a Verreaux's Eagle Owl perched on a tree branch in a streamside forest (1°43'26"N, 37°16'49"E) about 2 km from the Salato campsite near Ngurunit Village in foothills of the Ndoto Mountains, northern Kenya. Under its perch we found two pellets that contained three lower jaws and one upper jaw bone of bats, Chiroptera. These skeletal remains belonged to three individuals from two different species from the family Molossidae, and one individual of Lander's Horseshoe Bat *Rhinolophus landeri* (Rhinolophidae).

Bats are common prey items of owls, not surprising considering that both these animal groups are nocturnal (Marks *et al.* 1999). However, the proportion of bats in owls' diets varies between species and populations, and is linked to the ability of individual owl species to catch bats, and to the locational characteristics and availability of bats (Marks *et al.* 1999, Roulin & Christe 2013). In the diet of Verreaux's Eagle Owl, remains of fruit bats of the genus *Rousettus* were known from one Kenyan study (Brown 1965). But neither Marks *et al.* (1999) nor König & Weick (2008) mentioned bats from any other families. The bats described in our study are much smaller than the species of *Rousettus* which inhabit Kenya (according to our information only two *Rousettus* species are extant in Kenya – Egyptian Fruit Bat *R. aegyptiacus* and Long-haired Rousette *R. lanosus*, both weighing over 100 g). While Lander's Horseshoe Bat weighs only 5–11 g (Brown & Dunlop 1997), the jaw bones of the molossid bats that we recovered were even smaller. These findings thus extend our knowledge of the diet spectrum of Verreaux's Eagle Owl and support the notion of its dietary opportunism.

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An observation of successful bat predation by Gabar Goshawk *Micronisus gabar* at Ndoto Mountains, Kenya

Bat predation by diurnal raptors is a widespread phenomenon, but only occasionally observed or studied in detail. Observations of such behaviour have been published from the African continent, including Kenya, for the following species: Lanner Falcon *Falco biarmicus*, Peregrine Falcon *Falco peregrinus* (Thomsett 1987), Taita Falcon *Falco fasciinucha* (Thomsett 2006), African Goshawk *Accipiter tachiro* (Mumford 1980), Black Kite *Milvus migrans* (McWilliam 1989), Bat Hawk *Macheiramphus alcinus* (Jackson 2000) and Ayres's Hawk-Eagle *Hieraaetus dubius* (Wolf 1984).

On 3 February 2015 at 17:30 we observed such hunting behaviour in Gabar Goshawk *Micronisus gabar*. We were exploring a streamside forest at the foot of the Ndoto Mountains about 3 km from the Salato campsite (1°43'25"N, 37°16'49"E) near Ngurunit Village, northern Kenya. We saw a small unidentified bat hanging on a tree branch. A Gabar Goshawk flew towards it and tried unsuccessfully to catch it. After the initial attack the bat tried to escape, but the goshawk turned back and during a second attempt successfully caught it in mid-air. The bat was crying loudly and trying to escape by wing flapping, but the goshawk flew with it for several tens of metres, landed on a wide tree branch and began to consume it. We attempted to get closer to the feeding goshawk, but it flew away with its prey, thus making a precise determination of the bat species impossible.

The Gabar Goshawk's diet consists mainly of small to middle-sized birds and lizards, and mammalian prey is also taken to a lesser extent (Ferguson-Lees & Christie 2001). As far as we know, our observation is only the second published account of bat predation by this species. The first was by McGrew (1980) in Niokolo-Koba National Park in Senegal where a Gabar Goshawk successfully attacked an unidentified bat in mid-air and then drowned it in a nearby stream.

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News

A Kenya Bird Report

We are planning to reintroduce a Bird Report as a regular *Scopus* item along the lines of those that appeared in the journal up to 1996. In the initial report, confined to Kenya, we envisage covering the three-year period 2012–2014. We shall be looking to capture interesting records in one or more of the following categories:

- 1) Species scarce, threatened or data-deficient in Kenya
- 2) Occurrences outside the species' usual Kenyan range
- 3) Records of unusual numbers
- 4) Unusual dates for migrants
- 5) Records of breeding interest — numbers, new sites, etc.

If you have any such records for Kenya, please send them to scopus@naturekenya.org

For scarce species and major range extensions, you may be asked to provide supporting evidence in the form of a photo, drawing, or detailed written description of the observation.

We list below all those species for which we would like to publish records in the first category. Those with fewer than five Kenya records are indicated by an asterisk (*). The list of residents that are threatened or seldom recorded is a long one. Many have decreased drastically in recent years, particularly as a result of habitat loss. Palaearctic migrants tend to be little recorded away from such sites as Ngulia, Nairobi or the Rift Valley and some are regionally scarce within Kenya. Records of oceanic species will always be of interest.

We hope to include this first report in *Scopus* 36 due to be published early in 2016. Then, depending on the volume of records received, we aim to publish a report once a year, and to extend this to Uganda and Tanzania.

Species for which records are requested

(*signifies fewer than five Kenya records; the order and names follow *Checklist of the birds of Kenya*, 4th edition, 2009. Nairobi: Bird Committee, Nature Kenya, EANHHS)

Afrotropical and oceanic species

Ring-necked Francolin *Francolinus streptophorus*
 Chestnut-naped Francolin* *Francolinus castaneicollis*
 Maccoa Duck *Oxyura maccoa*
 Black-browed Albatross* *Thalassarche melanophrys*
 Shy Albatross *Thalassarche cauta*
 Cape Petrel* *Daption capense*
 Antarctic Prion *Pachyptila desolata*
 Slender-billed Prion* *Pachyptila belcheri*
 White-chinned Petrel* *Procellaria aequinoctialis*
 Wedge-tailed Shearwater *Puffinus pacificus*
 Tropical Shearwater *Puffinus bailloni*
 Sooty Shearwater* *Puffinus griseus*
 Jouanin's Petrel *Bulweria fallax*
 Wilson's Storm-petrel *Oceanites oceanicus*
 Black-bellied Storm-petrel* *Fregetta tropica*
 Leach's Storm-petrel* *Oceanodroma leucorhoa*
 Matsudaira's Petrel* *Oceanodroma matsudairae*

Great Crested Grebe *Podiceps cristatus*
 White-backed Night Heron *Gorsachius leuconotus*
 Rufous-bellied Heron [away from the Mara] *Ardeola rufiventris*
 Western Reef Heron [south coast] *Egretta gularis*
 White-tailed Tropicbird *Phaethon lepturus*
 Greater Frigatebird *Fregata minor*
 Lesser Frigatebird *Fregata ariel*
 Christmas Island Frigatebird* *Fregata andrewsi*
 Shoebill *Balaeniceps rex*
 Masked Booby *Sula dactylatra*
 Red-footed Booby *Sula sula*
 Brown Booby *Sula leucogaster*
 Dickinson's Kestrel *Falco dickinsoni*
 Taita Falcon *Falco fasciinucha*
 Lammergeier *Gypaetus barbatus*
 Egyptian Vulture *Neophron percnopterus*
 Rüppell's Vulture [only breeding records required] *Gyps rueppellii*
 White-headed Vulture *Trigonoceps occipitalis*
 Beaudouin's Snake Eagle *Circaetus beaudouini*
 African Marsh Harrier *Circus ranivorus*
 Ovambo Sparrowhawk *Accipiter ovampensis*
 Cassin's Hawk Eagle* *Spizaetus africanus*
 Arabian Bustard* *Ardeotis arabs*
 Denham's Bustard *Neotis denhami*
 Streaky-breasted Flufftail *Sarothrura boehmi*
 Striped Flufftail* *Sarothrura affinis*
 Black Crowned Crane *Balearica pavonina*
 Black-rumped Buttonquail *Turnix hottentottus*
 Egyptian Plover* *Pluvianus aegyptius*
 Kelp Gull* *Larus dominicanus*
 White-eyed Gull* *Ichthyaeus leucophthalmus*
 Lesser Noddy *Anous tenuirostris*
 Grey Parrot *Psittacus erithacus*
 Purple-crested Turaco *Tauraco porphyreolophus*
 Abyssinian Owl* *Asio abyssinicus*
 Racquet-tailed Roller* *Coracias spatulatus*
 Blue-breasted Kingfisher *Halcyon malimbica*
 Semi-collared Kingfisher *Alcedo semitorquata*
 Swallow-tailed Bee-eater* *Merops hirundineus*
 Southern Carmine Bee-eater* *Merops nubicoides*
 Southern Ground Hornbill [away from conservation areas] *Bucorvus leadbeateri*
 Velvet-mantled Drongo *Dicrurus modestus*
 Mascarene Martin* *Phedina borbonica*
 South African Cliff Swallow* *Petrochelidon spilodera*
 Friedmann's Lark *Mirafrapa pulpa*
 Gillett's Lark* *Mirafrapa gilletti*
 Foxy Cisticola *Cisticola troglodytes*
 River Prinia* *Prinia fluviatilis*
 White-winged Apalis* *Apalis chariessa*
 Little Grey Greenbul *Andropadus gracilis*
 Yellow-streaked Greenbul* *Phyllastrephus flavostriatus*
 Yellow-bellied Hyliota *Hyliota flavigaster*
 Green Hylia *Hylia prasina*
 Grey-chested Illadopsis *Kakamega poliothorax*
 Splendid Glossy Starling *Lamprotornis splendidus*

Spotted Ground Thrush *Zoothera guttata*
 Taita Thrush *Turdus helleri*
 Gambaga Flycatcher *Muscicapa gambagae*
 Pygmy Sunbird *Hedydipna platyura*
 Orange Weaver *Ploceus aurantius*
 Weyn's Weaver* *Ploceus weynsi*
 Heuglin's Masked Weaver *Ploceus heuglini*
 Yellow-mantled Weaver* *Ploceus tricolor*
 Red-headed Quelea *Quelea erythrops*
 Black-bellied Seed-cracker *Pyrenestes ostrinus*
 Broad-tailed Paradise Whydah *Vidua obtusa*
 Dusky Indigobird* *Vidua funerea*
 Striped Pipit *Anthus lineiventris*
 Streaky-headed Seedeater* *Crithagra gularis*
 Brown-rumped Bunting* *Emberiza affinis*

Palaeartic

Gadwall *Anas strepera*
 Common Pochard* *Aythya ferina*
 Ferruginous Duck *Aythya nyroca*
 Tufted Duck *Aythya fuligula*
 Eurasian Spoonbill *Platalea leucorodia*
 Eurasian Bittern* *Botaurus stellaris*
 Red-footed Falcon *Falco vespertinus*
 Amur Falcon [in western Kenya] *Falco amurensis*
 Eleonora's Falcon *Falco eleonora*
 Saker Falcon *Falco cherrug*
 Barbary Falcon *Falco pelegrinoides*
 Short-toed Snake Eagle* *Circaetus gallicus*
 Levant Sparrowhawk *Accipiter brevipes*
 Eurasian Sparrowhawk *Accipiter nisus*
 Long-legged Buzzard *Buteo rufinus*
 Greater Spotted Eagle *Aquila clanga*
 Eastern Imperial Eagle *Aquila heliaca*
 Corncrake *Crex crex*
 Spotted Crake *Porzana porzana*
 Demoiselle Crane* *Anthropoides virgo*
 Common Crane* *Grus grus*
 Eurasian Oystercatcher *Haematopus ostralegus*
 Northern Lapwing* *Vanellus vanellus*
 Pacific Golden Plover *Pluvialis fulva*
 Kentish Plover *Charadrius alexandrinus*
 Jack Snipe *Lymnocyrtus minimus*
 Pintail Snipe* *Gallinago stenura*
 Great Snipe *Gallinago media*
 Spotted Sandpiper* *Actitis macularius*
 Red Knot* *Calidris canutus*
 Red-necked Stint* *Calidris ruficollis*
 Long-toed Stint *Calidris subminuta*
 Pectoral Sandpiper *Calidris melanotos*
 Broad-billed Sandpiper [away from Sabaki] *Limicola falcinellus*
 Buff-breasted Sandpiper* *Tryngites subruficollis*
 Red-necked Phalarope *Phalaropus lobatus*
 Grey Phalarope* *Phalaropus fulicarius*
 Cream-coloured Courser* *Cursorius cursor*

Common Gull* *Larus canus*
 Pallas's Gull *Larus ichthyaetus*
 Slender-billed Gull *Chroicocephalus genei*
 Sandwich Tern *Sterna sandvicensis*
 Arctic Tern* *Sterna paradisaea*
 Little Tern *Sternula albifrons*
 Black Tern* *Chlidonias niger*
 Pomarine Skua *Stercorarius pomarinus*
 Arctic Skua* *Stercorarius parasiticus*
 Long-tailed Skua* *Stercorarius longicaudus*
 Eurasian Turtle Dove *Streptopelia turtur*
 Eurasian Wryneck *Jynx torquilla*
 Southern Grey Shrike* *Lanius meridionalis*
 Woodchat Shrike *Lanius senator*
 Masked Shrike *Lanius nubicus*
 Greater Short-toed Lark* *Calandrella brachydactyla*
 Grasshopper Warbler* *Locustella naevia*
 Savi's Warbler* *Locustella luscinioides*
 Basra Reed Warbler [western and central Kenya] *Acrocephalus griseldis*
 Icterine Warbler *Hippolais icterina*
 Wood Warbler *Phylloscopus sibilatrix*
 Rose-coloured Starling* *Pastor roseus*
 Common Redstart *Phoenicurus phoenicurus*
 Whinchat [in eastern Kenya] *Saxicola rubetra*
 Black-eared Wheatear* *Oenanthe hispanica*
 Desert Wheatear* *Oenanthe deserti*
 Pied Flycatcher* *Ficedula hypoleuca*
 Collared Flycatcher* *Ficedula albicollis*
 Semi-collared Flycatcher *Ficedula semitorquata*
 Tawny Pipit *Anthus campestris*
 Ortolan Bunting *Emberiza hortulana*

Additionally, these species in Western Kenya:

Thrush Nightingale *Luscinia luscinia*
 Irania *Irania gutturalis*
 Rufous Scrub Robin *Cercotrichas galactotes*
 River Warbler *Locustella fluviatilis*
 Marsh Warbler *Acrocephalus palustris*
 Upcher's Warbler *Hippolais languida*
 Olive-tree Warbler *Hippolais olivetorum*

And these coastal species inland:

Grey Plover *Pluvialis squatarola*
 Lesser Sand Plover *Charadrius mongolus*
 Greater Sand Plover *Charadrius leschenaultii*
 Bar-tailed Godwit *Limosa lapponica*
 Whimbrel *Numenius phaeopus*
 Eurasian Curlew *Numenius arquata*
 Common Redshank *Tringa totanus*
 Terek Sandpiper *Xenus cinerea*
 Ruddy Turnstone *Arenaria interpres*
 Sanderling *Calidris alba*
 Common Tern *Sterna hirundo*

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Urban, E.K., Fry, C.H. & Keith, S. (eds) 1986. *The birds of Africa*. Vol. 2. London: Academic Press.

BirdLife International 2013. Species factsheet: *Balearica regulorum*. Downloaded from <http://www.birdlife.org> on 14/05/2013.

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Ringling scheme of eastern Africa

This covers several countries in the area. Qualified and aspiring ringers should contact the ringling organizer, Bernard

Amakobe, Ornithology Section, Zoology Department, National Museums of Kenya, P.O. Box 40658, 00100, Nairobi, Kenya; tel. +254 20 3742161 ext. 243; email: scopumbre05@gmail.com

The BirdLife International Partnership in eastern Africa

Through its national partners, the BirdLife International Africa Partnership Secretariat in Nairobi co-ordinates bird conservation work in the region and produces several other publications of interest to ornithologists.

Ethiopian Wildlife & Natural History Society, P.O. Box 13303, Addis Ababa, Ethiopia; tel +251 (0) 2 183520; email: ewnhs@telecom.net.et

THE EAST AFRICA

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